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### The Seconds of Eternity.

Prof. Mitchell in one of his recent lectures, describing the gradual tendency of the earth's orbit to assume a circular form, used the following magnificent illustration :—

"Its short diameter was gradually lengthening and would continue so to expand until it should become perfectly circular, when it would again contract to its original shape and dimensions. And so the earth would vibrate periodically, and these periods were measured by millions upon millions of years. Thus," said Prof. M., "the earth will continue to swing back and forth, and to and fro in the heavens, like a great pendulum beating the *seconds* of eternity."

### An Irish Toad.

The Dublin (Ireland) *Medical Express* details a case which confirms the opinion that the toad can eject a venomous fluid from its mouth. A boy aged six years, while throwing stones at a large toad, felt something spirted into his eye. He was attacked soon after with spasmodic pain in his eye—then with coma; at times he would try to bite everything near him; at times he was in a state of apathy, and at times in a state of madness.—On the tenth day the only symptoms were stupor and inability to speak, a condition which has lasted for two years.—[Exchange.

[A pretty fair toad story that. *To (a) ddy* often attacks grown people much in the above manner, but such young children are generally spared.

### Life Preservers.

Inflated life preservers, made of india rubber, or such material, were condemned at the meeting of Steamboat Inspectors held last year. In the case of the burning of a steamboat on the Mississippi, which had a number of them on board, they were found totally useless in the hour of need. At the recent burning of the steamboat *Northern Indiana*, on Lake Erie, numbers of the inflated life preservers on board, it was discovered, had been rendered useless by being punctured with pins, by ladies using them for pincushions in the cabin on retiring at night.

Metallic life preservers, made of thin sheet copper, are the safest and best. It would be very easy to make every seat, table, and mattrass, used on a steamboat, a life-preserver, and steamboat proprietors should be compelled to do this.

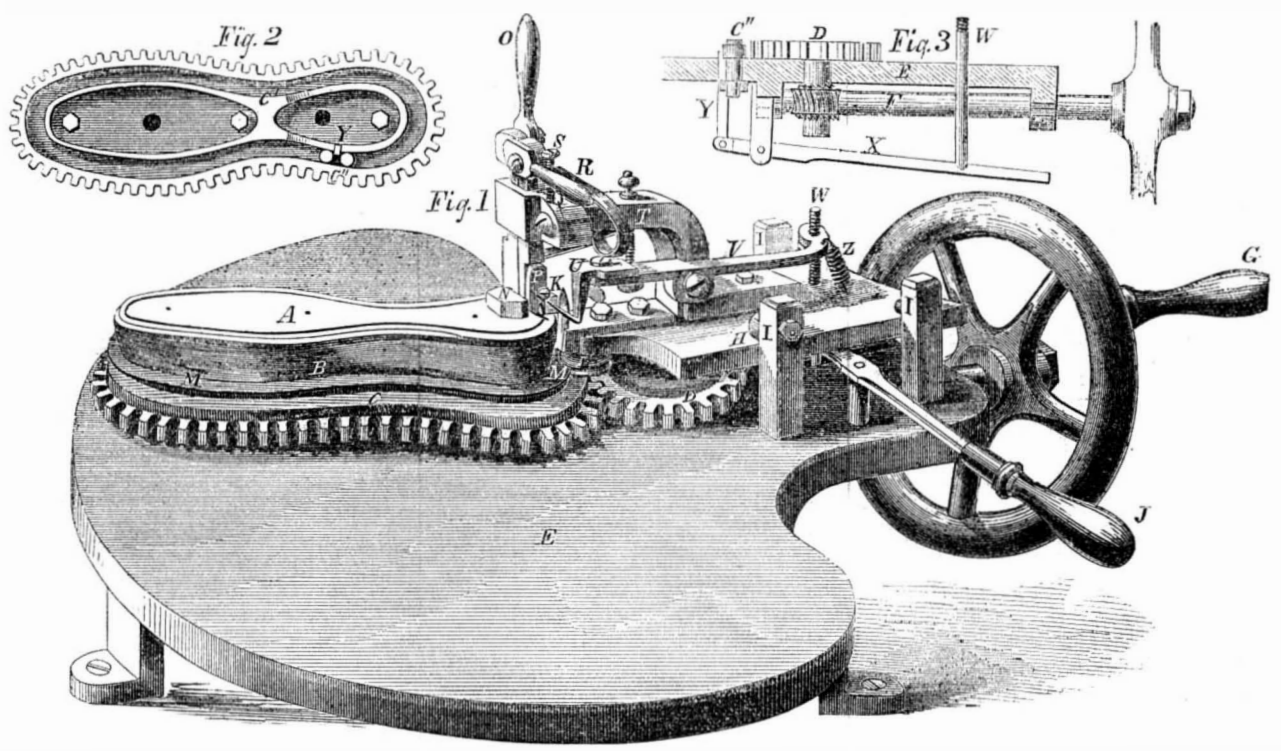
### A Great Gun.

A wrought-iron cannon has been manufactured in Liverpool, Eng., which weighs 22 tuns, and sends a ball of 300 pounds weight a distance of 4 miles.

The first exhibition of the Farmers and Mechanics Institute, of Northampton County, Pa., will be held in September next, on the 23d, 24th, 25th and 26th.

A bug resembling the lightning bug, and about the same size is committing serious depredations on the potato crop in Wilson co., Tenn. They get upon the vines by thousands, and strip them of vegetation from top to bottom.

## MACHINE FOR CUTTING OUT BOOT AND SHOE SOLES.




### Boot and Shoe Sole Machine.

Those who have witnessed the movements of a dexterous workman, in cutting out soles, would hardly suppose that there was any room or necessity for the assistance of mechanism. He places the leather upon a thin metallic pattern, and follows it around with a sharp knife; then he skives its edges, cuts the channel for the thread, and it is done. Can anything be better, more simple, or quick? We shall show that there can. Our engraving exhibits an invention which does the work about ten times faster, and in a far superior manner.

The leather, A, previously cut out into the usual rough form, is laid upon the block, B, which rests upon the cogged sole carriage, C. D is a driving pinion, which gears with C, and causes it to move around on the surface of the table, E, and bring the leather in contact with suitable knives, as will be presently described. Pinion, D, is put in motion by means of a worm wheel and screw, below the table, E, on the fly wheel shaft, F; power is applied to crank G. The sectional view, fig. 3 shows the manner in which pinion D receives motion.

The cutting knives are all attached to a sliding bed plate, H, which is moved up so that the cutters will act on the leather, or back out of the way, by means of the lever, J. I are the guide posts of the bed plate, H. K is an upright knife attached to the front end of bed plate H. This knife cuts out the sole. When bed plate, H, is moved up towards, B, the friction wheel, L, which is attached to the lower side of H, meets the edge of a thin pattern, M, which is placed between B and C. Pressure is maintained by the hand, on lever J, and the friction wheel thus kept constantly against pattern M; the knife, K, is, in this manner caused to follow the peculiar form of pattern, M. When a different formed or sized sole is required, a corresponding pattern, M, will be necessary.

N is a pressure pad, which presses lightly upon the leather, so as to keep it smooth while it is being cut. N is raised and lowered by means of the lever eccentric, O. P is a small cutter which does the channeling. It cuts on the top of the leather, and is attached to a plunger which is raised and lowered by eccentric lever Q. R is a spring that presses cutter P down, and S is a set screw by which the depth to which cutter P enters the leather, is regulated. T is an arm attached to H, which supports the levers and cutters described.

U is the skiving knife, and as the heel part of the sole must not be skived, it is necessary that the skiving knife should lift at the proper moment, so as not to cut the heel. Before this movement can be understood we must more fully explain the construction of the sole carriage, C. Figure 2 shows the under side of this device; it contains a path, C′, into which two guide pins, C″ fit. These pins are attached to table E (see fig. 3) and serve as the fulcrum for C, when it moves about on table E. The heel edge of path C′, observe, is not quite as high as the front end.

We now return to the skiver, U, and its movements. It is attached to the front end of a lever, V, which is pivoted to arm T. The back end of lever V connects with rod W, which unites, below the table, with lever X (fig. 3) and the forward end is joined to rod Y, which projects above the table and touches the edge of the follower path, C′. The heel part of the path edge is depressed, as shown, so that when Y reaches that depression it rises, and the skiver knife, U, is thus raised from the leather, leaving the heel part unskived. Z is a spring which pulls down lever V. Immediately below the end of V, where it unites with W, is a screw nut, by which the depth of the bevel which the skiver cuts, may be conveniently changed. The various cutters may be readily adjusted so as to suit different kinds and styles of soles, sewed or pegged work.

This machine operates with great rapidity, does the work with unerring certainty, and imparts a handsome finish. It surpasses handwork in every respect. It is strong and substantial; none of its parts are complicated or liable to get out of order. Single machines are sold at $25 and $30 leaving a large profit to the manufacturer. Invented by Wells and Bray, of Turner, Me., of whom, or of J. A. Knight & Co., 334 Broadway, N. Y., further information can be had. Patented March 11, 1856.

### A Cheap Deodorizer.

MESSRS. EDITORS—At this season of the year, when the effluvia from sinks is not only disagreeable, but highly deleterious to health, perhaps it might be of service to some of your numerous readers to know that the refuse lime, from the dry lime purifiers of coal gas works, is a most effectual disinfectant.

In the early part of this spring I had occasion to remove an old offensive place, when the emanations became overpowering. The idea then struck me, to try the effect of gas lime; its action was almost miraculous. Since that time our workmen are in the habit of sprinkling small quantities of this lime to keep down such emanations. The smell of the lime itself soon disappears. I consider this lime to be an effectual and cheap disinfectant for such putrid odors. THOS. HOADLEY,
Engineer of the Cleveland Gas Co., Ohio.

### A Powerful Fire Engine.

Messrs. Wm. Jeffers & Co., Pawtucket, R. I., have lately built a fire engine for the Common Council of Adrian City, Mich. The engine is in possession of Alert Engine Co., No. 1, of that city. It is of the piano style, 10-inch cylinders, with changeable stroke of five to nine inches.

At a recent trial of the machine, it threw four 5-8 in. streams, simultaneously, 113 feet high. One, inch and a quarter stream, was thrown 143 feet. One, inch and a half stream, was thrown nearly 113 feet. One, inch and an eighth stream, was thrown 186 feet horizontally. One, inch and an eighth stream, was thrown 202 feet horizontally. One inch stream was thrown 215 feet 6 inches horizontally.

### Artificial Formation of Minerals.

Professor Houseman, of Gottingen, Germany, has published an interesting scientific paper on the formation of minerals in and about furnaces, by furnace action. He enumerates the following varieties observed by him: silver, lead, copper, iron, bismuth, lead glance, blend, oxyd of zinc, red copper ore, iron glance, and magnetic iron ore.

### The Atlantic Ocean Telegraph.

We would direct the attention of our readers to the article on the above subject on another page. Its author discusses the feasibility of the project with ability and scientific acumen. All those interested in the success of the ocean telegraph should read it with attention.

The boiler of the cotton factory at Little Falls, N. Y., exploded on the 1st inst. The factory was terribly shattered. One man was killed and three women badly wounded. The boiler was shot to an immense distance from the factory.

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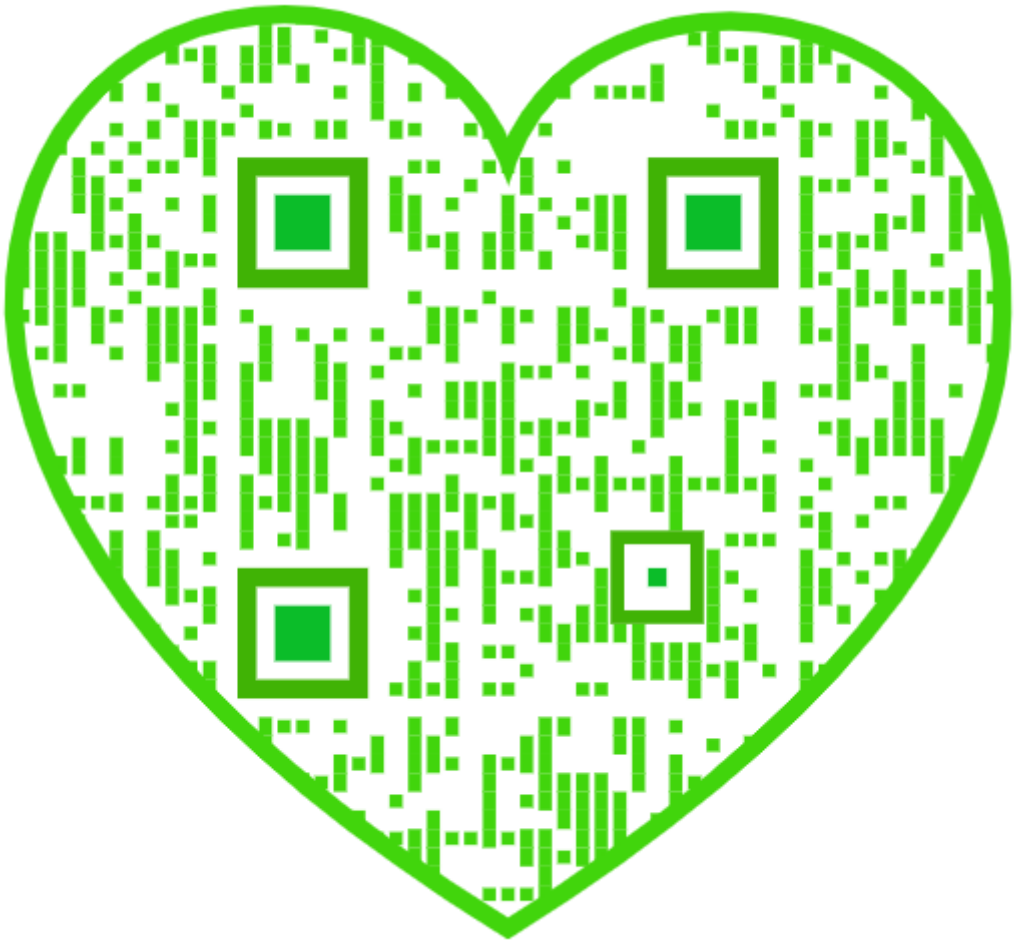

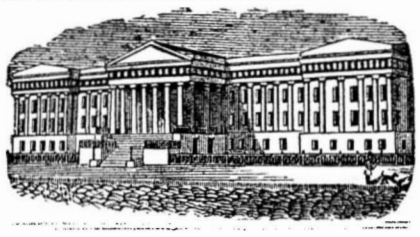

[Reported Officially for the Scientific American.]

## LIST OF PATENT CLAIMS

### Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 29, 1856.

SHUTTER OPERATOR—James R. Creighton, of Boston, Mass.: I claim the attachment of the serrated tumbler catch, T, to the slide, Q, said catch meshing or interlocking with a similarly serrated or toothed surface, opposed, R, on the side of the slide box or frame box, E, in combination with the square extensionrod, U, and guides, S S', by which I am enabled to operate the outside blinds or shutters of a house from the inside of the same, and to secure said blinds or shutters in any desired position, without the liability of their dislodgment from the outside, unless by the exercise of unusual violence.

CHURNS—W. H. Burnham and B. Hibbard, of Cortland, N. Y.: We claim our improved churn dasher, composed o two independent frames combined with each other and with the operating lever, substantially in the manner set forth.

METAL PLANERS—E. C. Cleveland, of Worcester, Mass.: I claim the friction box, J, attached to the shaft, I, as shown, and provided with adjustable dogs, o o, the box, J, being connected with the shaft, H, by the gearing, j f, and operating conjointly with the gearing, E F b, and and pawl, a, on the shafts, c c H, and the arm, h, which projects over the box, J, as shown, for the purpose specified.

SAWING MACHINERY—A. S. T. Copeland, of Pittsburgh, Pa.: I do not claim that attaching a saw to pitman is new. Nor do I claim the muley saw, gate, or gash spring, pole or levers, crank pins set in balance wheels, or any other connections on old principles.

But I claim the saw heads, H H, and saw strainers, S S, and the combination of said saw heads and strainers with the screw nuts, N N, and screws, Q Q and m m, in any manner substantially the same as shown and described for the purposes set forth.

Also the attaching of saw heads to pitman in any manner substantially the same as shown and described, for the purposes set forth.

Also the combination of belt reversers, 2 and 3, with the mechanism for starting and stopping saws and reversing pitman and circular saw shaft, in any manner substantially the same as shown and described, for the purposes set forth.

Also log reversers, 1 and 1, 2 and 2, 3 and 3 and 4 and 4, operating in the manner shown and described, for the purposes set forth.

HARNESS FOR WEAVING SEAMLESS BAGS—Algernon L. Cole, of Windham, Me.: I claim the application to weavers harnesses the addition of one row of heddle eyes—making two rows instead of one upon each leaf of harness—as described, or any other substantially the same.

PEGGING JACKS—Alfred Bailey, of Amesbury, Mass: I claim, first, the application of a spiral or other spring, c, substantially as I apply it to hold the last, L, firmly in its place, and at the same time allow the head pieces, E and F, to be put in any desired position without readjusting the last, L, or spring, c.

Second, the arrangement by which the vertical head, E, may be turned vertically above the axis upon which it turns horizontally, in the manner and for the purpose substantially as described.

FOLDING TABLES—C. D. Barnitz, of Baltimore, Md.: I claim the movable braces and supports, B, which, when in a horizontal position, brace firmly the legs in an upright position, and also give support to the lids, A, and when turned into a vertical position permit the legs to close in against the under surface of the table.

RAKING APPARATUS OF CORN AND CANE HARVESTERS—John W. Batson, (assignor to himself and Martin H. Batson,) of Triadelphia, Md.: I claim in combination with the endless rake belts, L L', passing under and over the platform, and thence over the pulleys, K K', the shield, M, placed between them, when said shield receives the corn or cane from the rakes at their highest elevation, and conveys it into a wagon or other receptacle alongside, substantially as set forth.

CUTTING APPARATUS OF CORN AND CANE HARVESTERS—John W. Batson (assignor to himself and M. H. Batson,) of Triadelphia, Md.: I claim the double angled V-shaped cutters, composed of strips and under supports, substantially as represented and for the purposes set forth.

I also claim hanging said cutters to a pivoted bar, so that they may be raised up out of cutting position when the machine is drawn through the stubble, to prevent their catching against the previously cut cane or corn, as set forth.

SAWING STONE IN TAPER FORM—H. J. Behrens, of New York City: I do not claim giving the saw a compound motion irrespective of the means.

But I claim giving to a saw placed in a line inclined to the line of motion of the saw frame a lateral motion, independent of the motion of the frame, or at right angles to the line of motion thereof, by means of the several devices, substantially in the manner and for the purposes set forth.

SOLAR SALT EVAPORATION.—J. F. Boynton. of Syracuse, N. Y.: I claim the use and application of the covers, B, of the salt vats, A, for the evaporation of salt water by solar influence, in the manner specified.

FOUNTAIN PEN—Austin G. Day, of Seymour, Conn.: I claim the sliding feed tube having an aperture near its upper end whence the ink flows when the pen is in use, the aperture being closed and the ink excluded from the feeding tube by drawing it downwards into the lower end of the ink chamber.

I also claim the combination of the air hole or ven with the sliding feeding tube, the enlarged end of which closes the vent hole when the feeding tube is drawn down, to stop the flow of ink to the pen.

PYROGENOUS LUBRICATING OILS—Samuel Downer and Joshua Merrill, of Boston, Mass.: We disclaim the use of all mixtures in which caoutchouc is diffused without its chemical state being altered; and we confine the application of our discovery to the improvement of the qualities of the lubricating oils from coals, coal tar, and bitumens solely. Our improvement of these oils depends upon the perfect solution in them of small portions of bitumens of the elastic kind, caoutchouc or gutta percha, so as to prevent them from passing off in currents of air at common temperatures without diminishing their lubricating qualities in the slightest degree.

What we claim, is the improvement of dissolving elastic bitumens, caoutchouc or gutta percha in the pyrogenic oils used as lubricators, substantially as set forth.

SAWING MARBLE—Lewis S. Fisher, of Waynesboro', Pa.: I claim operating the saws, f f, by racks, e e, and cog wheel, d, in combination with the guides, z z and m m, when arranged and operated in the manner and for the purposes set forth.

FORE AND AFT RIG OF VESSELS—George W. Geran, of Brooklyn, N. Y.: I claim constructing the main sail, A, as shown, and having the lower end of the topsail, D, attached to the outer end of the boom, B, substantially as shown and described.

BAKE OVENS—John P. Hayes, of Philadelphia, Pa.: I claim the heating flues, B B, arranged as described, that is, so as to cause the products of combustion to pass from the fire chamber below first into the lower flue, B, at 1, thence behind its partition, f, and out at 1', thence into the next flue, B, above at 2 and out at 2', and so on, as shown by the arrows through the successive flues which may be above to the escape flue, G, the said flues, B, being arranged on the two sides of the casing, as described, and divided by the partition, e, and the products of combustion being directed thereby, together with the partition plates, f and g, in the wall, substantially as described.

SUGAR EVAPORATORS—Samuel H. Gilman, of New Orleans, La.: I claim the combination of the long kettle, B C, with the train of kettles, L M N O R, and pipe, S, the serpentine channel, T U V, and the fire flues, A D E K, in the manner and for the purposes specified.

Second, the combination of the troughs, F G H I and J, with the train of kettles, L M N O R, and the long kettle, B C, in the manner and for the purposes specified.

DEVICES IN STAVE MACHINERY—Charles Hoyt, of West Aurora, Ill.: I do not claim the cylinders, R R, for dressing the stave, for they have been previously used.

But first, I claim adjusting the staves, T, in line with the feed rollers, H H, and jaws, I I, by means of the sliding bed or plate, C, and laterally sliding plates, G G, arranged as shown and described.

Second, I claim the feeding block, E, when operated by the spring, e, lever, F, and eccentric, o, substantially as shown, for the purpose of feeding the staves to the cutters.

STEAM BOILER FURNACES—E. T. Ingalls, of Haverhill, Mass.: I claim the improvement in steam boilers which consists in arranging a fire pot of sufficient depth to contain a large quantity of fuel, within, or about and underneath the boiler placed concentrically therewith, in such a manner as to keep the fuel which is in contact with the lower part of the furnace in a full state of combustion always, as set forth.

PATCHING RIFLE SHOT—Ralph Henry Isham, of Greenwich, Conn.: I claim the use of a leaden ball or bullet of any desirable form with a metallic case or coating of brass or other firm metal in whole or in part, whether plated, washed or galvanized, or by whatever mechanical device the coating or partial coating may be effected, for the use and objects of this invention, as set forth.

CORN PLANTERS—James D. Jeffers, Joseph Sparks, and John H. Jeffers, of Philadelphia, Pa.: We do not claim the tubes, H H, nor do we claim operating inclined planes and vents together in a corn dropping box, irrespectively of the peculiar construction and arrangement of the same, as described; nor do we confine our claim to any number of boxes, A, upon one carriage, nor to any number of dropping vents in each box.

But first, we claim the moving inclined planes, I I, and spring, C C, when constructed and combined so as to operate together within the grain adjusting recesses, E E, substantially and for the purposes set forth.

Second, we claim the stationary inclined planes, D D, when operating in combination with the said recesses, E E, substantially and for the purpose set forth.

CLAMP FOR PLUMBERS—F. R. Langwith, of New York City: I claim the combination and arrangement of the clamp box, A B, the clamping levers, C and H, when either is used, and also in combination therewith the screws for adjusting the cock in a proper position during the process of soldering with the main pipe, when arranged and operating substantially as described.

PRINTING PRESS.—S. W. Lowe, of Philapelphia, Pa.: I do not claim the employment of a cone-shaped roller for giving impressions, well knowing that the same has been employed before.

But I claim, first, adjusting the conical roller, F, by means of the screw, k, as specified.

Second, the radiating lever, C, with its conical roller, F, in combination with the tympan and its spring, x, the whole being arranged substantially in the manner and for the purpose set forth.

STAVE MACHINE—John McMurtry, of Fayette Co., Ky.: I claim the combination of the endless claim or its equivalent, with the undulating bed or bearing, and the combination of these two devices with the planer, for dressing the outer surface, and beveling the two edges to suit any size cask required, in the manner substantially as set forth.

Second, I claim the obtuse joint in the endless chain, B B, at the carrying wheel, for the purposes specified.

INSERTING FAUCETS INTO FLUIDS UNDER PRESSURE.—Patrick Mihan, of Boston, Mass.: I claim the faucet receiver, as composed of the socket tube, A, and the perforated thimble, B, applied together by means of screws and operated by the action of the faucet, substantially in manner and for the purpose as specified.

HAND SEED PLANTER—A. C. Miller, of Morgantown, Va.: I claim, in combination with the reciprocating agitators, I, the stationary bent adjustable seed bar, B, with its wedge shaped openings, a, and inclined sides, b, for the purpose of sowing seed broadcast, and adjusting the machine to the quality or kind of seeds to be sown, as set forth.

SOAP BOILING—Campbell Morfit, of Baltimore, Md.: I claim the combination of the hollow shaft and tubular arms as a mixing, stirring, and heating twirl for dry steam, either in open or closed vessels, as described.

POTATO PLANTERS—John Moore, of Quincy Point, Mass.: I do not claim a seed planter wherein there is a furrow opener, a contrivance for dropping the seed, and one for covering the furrow.

But I claim arranging and combining with the chambered cylinder, H, and its spring guards, M, and so as to operate therewith, as set forth, a series of scrapers, b b, the same being for the purpose specified.

COAL SCUTTLES—James Myers, Jr., of New York City: I claim constructing the scuttle, as shown and described, with a cast iron chambered or dish-shaped bottom, B, having a supporting flange, C, in conjunction with and attached to the sheet or wrought iron sides or body, A, of the scuttle, as and for the purpose set forth.

KNITTING MACHINES—John Nesmith, of Lowell, Mass. I claim the lowering or raising the ends of the needles which receive the threads, so that the threads will not enter the hooks of the needles when out of their working line, as the carrier passes them, while the other ends of the needles remain connected with the mechanical arrangement used for pushing them forward and drawing them back to form the stitch on their working lines, essentially in the manner and for the purposes set forth.

Second, I claim the slides, N2, or their mechanical equivalents, for taktng the needles out of the work for narrowing the fabric, and bringing them back into the work for widening the fabric, essentially as set forth.

Third, I claim the metallic rests or guards, d, or their equivalents, for constantly keeping a number of the needles in their working line, essentially in the manner as fully set forth and described.

Fourth, I claim the connection of a registering or measuring apparatus, constructed as described, or otherwise formed, with the moving parts of my machine, for the purpose of bringing into use and taking out of use, the requisite needles, at the proper time of shaping the fabric, and for severing the threads when the work is done, and stopping the machine when required, essentially in the manner as set forth.

Fifth, I claim the arrangement and movement of the finned bar, W, or its mechanical equivalent, to aid in forming the stitch, also its movement backwards to uncover the ends of the needles for putting on the new fabric, essentially in the manner and for the purposes set forth.

BINDING GRAIN—W. F. Pagett, of Stone Bridge, Va: I claim the way, A, in combination with the slide J, or its equivalent, when operating in the manner and for the purposes described.

Second, I claim the band, G, in combination with the way, A, and slide, J, for the purposes described.

PRINTING PRESS.—Thomas and Alfred Parkes, of Brooklyn, N. Y.: We claim, first, the cylinder, B, having flat surfaces, a a, on its periphery, to receive the forms, in combination with the printing cylinders, D D, placed in sliding bearings, and arranged substantially as described for the purpose set forth.

Second, we claim the reciprocating shafts, 3, 5, 6, and stationary shafts, a a a, t u v, with the tapes arranged as shown, whereby the two printing cylinders, D D, are fed from one feed board. and the sheets therefrom, when printed on both sides, deposited upon one and the same fly-board.

Third, we claim the sliding frame, M, arranged and operating substantially as shown, whereby the motion of the belt, l, is reversed at the proper time, and also stopped at proper intervals, and the shaft, d, raised and lowered for the purpose of reversing the movement of the sheets and causing them to be printed on both sides.

BEE HIVES—J. S. Brown, of Washington, D. C., assignor to Joseph Kent, of Baltimore, Md.: I claim the peculiar construction of the drawer, E, and its arrangement in combination with the basement, D, and bottom, M, of the hive, substantially as set forth, so as to be reversible in position, and to serve the several purposes of a controllable ventilator, filth receptacle, with moth trap, and feeding chamber, in the manner specified.

SAWING MACHINE—T. T. Prosser, of Oconomowock, Wis.: I claim the levers, E D, pivoted or attached to the uprights, C C, the saw, F, being placed at one end of the levers, and the levers adjusted by the bars, J, and set screws, K, at the opposite ends, substantially as described for the purpose set forth.

GUTTA PERCHA WIRE COVERING—James Reynolds, of New York City: I claim, first, providing the cylinder or other vessel, in which the gutta percha is submitted to the pressure with a connection to an air pump or other suitable exhausting apparatus, for the purpose described.

Second, the arrangement of the die and core or core piece, transversely to the direction in which works the piston or other device for producing the pressure, substantially as and for the purpose specified.

Third, providing the stomach, I, or its equivalent, which contains the die, with a variable escape opening, p, substantially as and for the purpose set forth.

Fourth, the continuously revolving water trough, arranged relatively to the die, and operating substantially as and for the purpose set forth.

PICKPOCKET DETECTOR—S. W. Ruggles, of Fitchburgh, Mass.: I do not claim in alarm detectors, starting or operating the alarm by pulling or drawing on a cord or its equivalent connected therewith, nor yet in such devices, of itself, the mechanism here employed of a spring barrel provided with teeth, and in its rotation operating the spring hammer of a bell to give a repeated alarm.

But I claim suspending the alarm detector or instrument proper, including the case, A, and its working parts by the cord or chain, D, from or through the spring barrel, B, for alternate operation of the cord and bell-hammer by said barrel, in relation to the case, as and for the purposes specified.

DEVICES IN CARVING WOOD—Nelson Ruger, of West Farms, N. Y.: First, I claim the cutters, c d g, in combination with the bars, I J, having arms, K L N, attached to them, these arms having bars, M O, pivoted or jointed to their outer ends, to which the cutters, e, and tracer, g, are attached, as shown and described.

Second, I claim the bar, Q, placed on a rod, P, which is attached horizontally to the vertical bar. O, the ends of the bar, Q, fitting between the arms, K L, as shown for the purpose set forth.

SMUT MACHINES—G. H. Starbuck and L. D. Gilman, of Troy, N. Y.: We claim the combination of the screen, F, plate, H, funnels, I, and disk, e, with spike, f, attached when said plates are attached to the shaft, E, and fitted within the case or shell, A, as described, for the purpose set forth.

FORMING HAT BODIES—Alva B. Taylor, of Newark, N. J.: I claim the combination of a perforated cone, picking apparatus, and feeding apparatus located and arranged as described.

The combination with a main picking cylinder of a secondary picking cylinder, operating substantially as set forth.

The pyramidal draft box constructed substantially as set forth in combination with a fan and fan case for generating the currents of air.

OX YOKES—Miron Smith, of Sandisfield, Mass.: I do not claim the devices for the simultaneous movement of the bow-slides, as such are not new.

But I claim the adjustable fulcrum block, g, in combination with the bow slides, J J, as, and for the purposes set forth.

ELLIPSOIDAL FORMS—G. W. Walton & H. Edgarton of Wilmington, Del.: We claim the feed rollers, K K', and expanding cutters, I I', one or more, attached or fitted to the hollow shaft, B, when the parts are arranged and operated as shown and described, for the purpose specified.

SPOOLS—A. D. Waymoth, of Fitchburg, Mass.: I do not claim combining one or more cutters with a sliding carriage made to slide horizontally and at right angles to the axis of the work to be turned, but I claim combining the rounding, severing, and body cutters with a carriage made to slide between the chuck and boring carriage, and in line with the latter, and so as to be moved toward the chuck by the boring carriage, while it is moved towards the work, in the manner set forth.

I also claim arranging the body and severing cutters, and combining them with the cutter carriage by means of a turning holder, K, as specified, whereby the said cutters may be made to operate and be put in operation by means substantially as explained.

WINDOW SASH—C. P. Weaver, of Philadelphia, Pa.: I do not claim the employment of a single weight for the balancing of sashes.

But I claim the employment, in connection with window frames and sashes of the sliding bars, D and E, the same being arranged and constructed substantially in the manner set forth, for the purpose of removing and replacing said sashes with facility.

PURIFYING WHITE OXYD OF ZINC—Joseph Wharton, of Philadelphia, Pa.: I claim cooling white oxyd of zinc and separating it from impurities by causing the products of the furnaces to impinge successively upon a surface of water, in the manner substantially as described.

CLOVER SEED HARVESTER—C. B. Wheeler & A. Bascom, of Steuben, Ohio: We claim the reel, F, and cutters or teeth, b, placed within the sliding or adjustable frame, E, in combination with the endless apron, H. the parts being arranged as shown, for the purpose set forth.

SAD IRON HEATERS—B. F. Wheelock, of Mayville, Wis.: I do not claim the particular construction and adaptation of the heater to the use of the ordinary flat or sad-irons,

But I claim the use or application of the chains, g g, in combination with the table, f, and beds, c c, made to balance on the ears, e e e, in the manner substantially as described, for the purposes specified.

CUTTING OUT SOLES OF BOOTS AND SHOES—Jas. W. Wilder, of Boston, Mass.: I claim arranging and vibrating the knives around the cutters, p q, in the manner and for the purpose substantially as set forth.

SMOKING MEATS—John Wright, of Wilmington, Del.: I claim the application to furnaces of smoke houses a back plate of iron or other incombustible material forming an air chamber which will increase the draft of the furnaces and prevent any smoke from being wasted or lost, and also the application of inclined flues made of brick, iron, earthen ware, or any other incombustible material, together with the smoke spreaders, as described, for the purpose of smoking meats, &c., the furnaces being upon the outside of the building.

GATES FOR WATER WHEELS—J. C. Shorey, of Rochester, N H. (assignor to himself and A. J. Webster): I claim applying the two gates to the wheel and flume, in manner and so as to operate with respect to the discharging opening and the wheel shaft, substantially as specified.

MOLDS FOR HOLLOW PROJECTILES—Ethan Allen, of Worcester, Mass.: I do not claim any particular form or arrangement of parts.

But I claim cutting off the sprue by means of a cutter working on the curve of the inner surface of the ball, so as to leave the ball smooth and symmetrical, substantially in the manner and for the purposes set forth.

FLOUR BOLTS—S. C. Mendenhall & J. Conner, of Richmond. Ind.: We claim, first, the manner described of varying the action of the revolving brushes, b, by giving to the brush bars, a, any desired backward or forward angular set on the radial arms or bosses which carry the brush bars in relations to the run or travel of the same within the screen cylinder, by means of the links, m, connecting the inclined pivots or rods, g3, of the brush bars with a turning ring, n, arranged to revolve together with the brush shaft, but made capable of circular adjustment thereon, or the mechanical equivalents of such devices, operating essentially as and for the purposes specified.

Second, in combination with the radial expansion and contraction of the brush bars and brushes within or against the screen cylinder for graduating the rub of the brushes, as specified, giving any varied angular set backwards or forwards, to such graduated rub, by so connecting the brush bars with the devices which effect their expansion or contraction as to admit of a variable inclined set or position, in relation to the run, being given the said brush bars and brushes, to adjust, or improve the action of said radially graduated rub, as set forth.

FACE PLATE FOR LOCKS—T. B. Atterbury & William Warwick (assignors to Warwick, Atterbury & Co.,) of Pittsburg, Pa.: We claim the separate or distinct guard or face plate, of such a form in relation to case or skeleton frame of a lock or other fastening, that it may be put on either of the two sides of the said case or frame, whereby either of the sides can be made the face of the said lock or fastening substantially as described.

CHIMNEY DAMPERS—T. F. Engelbrecht (assignor to T. F. Engelbrecht & T. C. Nye,) of New York City: I claim in perforated dampers for anthracite coal grates, the supplemental perforations, consisting of the suspended conical deflectors, as set forth.

FAUCET—Joseph Goodridge, (assignor to the Boston Faucet Co.,) of Boston, Mass.: I claim so combining with the valve and its stem the dovetailed recess, d, the expander, h, and a shoulder and screws, or the equivalents thereof, whereby the foot of the spring packing may be fastened into the valve, substantially in manner and for the purpose as specified.

WHIFFLETREES—George Kenny, of Milford. N. H., (assignor to himself and G. N. Davis,) of Boston, Mass.: I claim the combination of rubber washers with the whiffletrees, and about the king bolt and the boxes arranged with the same, substantially as described so as to protect the rubbar and boxes from the entrance of water, dirt, &c., thus preventing the wear of the parts.

WHIFFLETREES—George Kenny, of Milford, N. H., assignor to himself and Geo. N. Davis, of Boston Mass,: I claim the combination of rubber about the bolt on which the whiffletree turns within the cylindrical strap and between the braces, c c dd, so that it may be compressed, and thereby operate as a spring, as specified, as well as serve to keep out the dirt, and prevent the wear and noise.

PEGGING JACKS—Alfred Swingle (assignor to Elmer Townsend,) of Boston, Mass.: I believe there is nothing new in sustaining a last by mechanism which will permit it to be revolved in two planes, and that this principle, though common both to my machine and that of Dewitt, was not the invention of the said Dewitt, nor is it claimed by him or by me.

I claim the arrangement and application of the trammel or grooved cross, its slide bar and guide pins, the last holder and its sustaining arm, the same enabling advantages or new and useful effects to be attained, as specified.

CULTIVATORS—Jacob Zimmerman, of Oswego, Ill.: I claim the ravolving rake and cleaner, in combination with the series of elastic cutters, c, and flat cutters, C, as set forth.

#### RE-ISSUES.

OPERATING VALVES IN DIRECT ACTION STEAM ENGINES—W. H. Guild & W. F. Garrison, of Brooklyn, N. Y. Original patent dated March 27, 1855: We claim giving to the valve the whole or part of the movement necessary to effect the change in the direction of the movement of the engine piston, by means of the steam acting upon a piston, E, which is fitted to work perpendicularly to the valve, in a cylinder, D, forming a part of the valve driver, or device employed to drive the valve, and is supported against the pressure of steam by a rocker, e, or its equivalent, by which it is caused to operate on the valve driver, substantially as set forth.

#### DESIGNS.

COOKING STOVES—Joseph Hackett, of Louisville, Ky.

CLOCK FRONTS—J. & R. Shepherd, of New York City.

COOKING STOVES—Benjamin Wardwell, of Fall River, Mass., and Ephraim Barstow, of Providence, R. I.

### Antidote for Strychnine.

We have received a letter from Mr. C. Leavitt, of Rockville, Conn., in relation to the use of coffee in neutralizing the deadly effects of Strychnine. A friend of his had a valuable dog, which was poisoned with strychnine and was fast sinking under its influence—being unable to stand—when Mr. L. saw him, and being informed of the cause, suggested that a strong decoction of coffee be given to the animal. About half a pint was administered. and it soon began to get better, and ultimately recovered entirely. We recommend this to the attention of physiologists, who may experiment with strychnine upon animals, for the purpose of discovering an antidote. Let some experiments be made with coffee. It has been said that lard is an antidote for strychnine; but this has been denied by persons who have tried it. Strychnine is sometimes made into pills with lard, for poisoning foxes and wolves.

### Dummy Locomotives.

This is the name that was given to a condensing locomotive using a fan blower, which was built about five years ago by Henry Waterman for the Hudson River R. R. Co., to draw their cars through the streets instead of horses. The machinery was all concealed; no smoke was emitted, as coke was used, and it made no noise—hence it was termed the "Dummy." It was tried and operated satisfactory for some time, but was interdicted by the Street Commissioner. We understand that permission has now been obtained to run the Dummy, and that three such locomotives will soon be placed on this railroad to do the work of about one hundred horses, and effect a great saving in the expenses of the Company These Dummy locomotives can be run with as much safety as horses, as their speed will be as low.

### Water for Brooklyn.

Operations have commenced to construct works for supplying Brooklyn with water. The principal reservoir will be on Cypress Hills—six miles from the city. A second reservoir will be located on Flatbush hill, 175 feet above tide water, for the supply of the high ground in that neighborhood. The cost of these works is estimated at over four millions of dollars. 10,000,000 gallons are to be supplied daily in two years.

### Fire-Proof Boiler Rooms.

On the 1st inst. on motion of Senator Seward a resolution was adopted by the Senate directing the Committee on Commerce to inquire into the expediency of requiring the boiler rooms of all steamers to be constructed of fire proof materials. The Committee on Commerce should at once prepare a Bill requiring all steamers to be so constructed.

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(For the Scientific American.)

**The Atlantic Ocean Telegraph.**

I have, for many months, contemplated addressing you an article relative to the probable success of Ocean Telegraphs. The object aimed at by a communication hence to Europe, is of such importance, and its success so greatly to be desired, that it seems to be the duty of every one who may even suppose himself capable of rendering any assistance by examining the difficulties that present themselves, and offering suggestions which may tend to obviate them, to do so. From the magnitude of the undertaking, and the great expense necessarily attending it, those engaged therein have undoubtedly given not only their own serious attention to the subject, but have called into requisition all the light and aids they could command; and when the character of those conducting the enterprise is considered, it would be idle to suppose that they have undertaken it without having fully weighed all the probabilities presented to them. Still, the possibility of failure, as all must admit, and the considerable fear I have of its success, from examining the detail of the plan, as at present proposed, must be my apology for venturing a few views upon the subject Having for more than ten years closely and almost exclusively applied myself to the study of telegraphing in its broadest sense, both practically and theoretically; directing my thoughts to the subject with the utmost igor of which I am capable, I confess I some what fear the possibility of its practical realization; but when so many others, many of whom have had as ample and some greater opportunities than I have, have satisfied themselves, otherwise, it would be presumptuous in me to entirely conclude the subject, even in my own mind; and I shall be most heartily pleased to be agreeably disappointed. It is but justice to myself to state that although I intend soon to come before the world with a candidate for favor in the shape of a telegraphic apparatus; yet I am not, nor have I ever been in any manner connected with, nor pecuniarily interested in any project for Transatlantic Telegraphing. My earnest desire is for its success; and if I can be instrumental in forwarding the solution of the question I shall gladly do so; whilst, on the other hand, if I think I see serious obstacles to its practical accomplishment, in its present shape, I will endeavor to point them out, that they may be verified or disproved.

Passing over the possibility of securing an intact covering to the wire and safely placing the cable, in the required position, where it will remain free from injury, of which I have no serious doubts, I will merely take up the subject of *powers of conduction* of the wire, the gutta percha, covering, and the element of salt water surrounding them. From page 540, Vol. 8, of the eighth edition of the Encyclopœdia Britannica, I quote the following:

"Although some bodies are said to be perfect non-conductors, yet this is not strictly true. A strong electrical discharge can be made to pass through a thin film of the worst conductor.

It appears to me the terms "non-resistants" and "resistants," or "resistants *minus*," and "resistants *plus*," used relatively to the passage or projection of an electrical current, would convey to the sense a clearer idea of the power of different substances, as a vehicle for electricity, than the terms "conductors" and "non-conductors." Now, the only supposed *perfect* non-resistant (or conductor) known, would be a complete *vacuum*, were its attainment possible. This is not demonstrable by any known means, nor is it essential in this connection. We have to depend upon substances which offer greater or less resistance, as the medium through which to accomplish the desired end. First among those denominated "conductors," occur some of the metals—silver and copper ranging first and second, and iron eleventh in the list, as laid down in the work quoted above, whilst in the list of non-conductors, or resistants is found gutta percha, standing at the *head;* or that substance among that class offering the *least resistance*—that connecting link between the two at which it has been concluded by philosophers to make an arbitrary division for the convenience of distinction.

If copper be used for the wire, and gutta percha for the substance to insulate it from the water, the first question which would present itself would be, What are the relative conductabilities of copper and gutta percha? In absence of any determination of that point, suppose the ratio of resistance to passage in gutta percha, to be at 25,000,000 to 1 (a single unit) in copper, which I think must be their full difference. Now if the thickness of the gutta percha covering be one inch (making the cable something over two inches diameter, including the wire) then, when the length of the wire should reach 25,000,000 inches, or about four hundred miles, the powers of resistance between the two substances would be in equilibrio; and if there be a substance immediately surrounding the cable, which is a good conductor, connecting immediately with the great electrical reservoir,—the earth upon which the cable is to lie—then if the wire exceed that length, the line of passage would be in favor of a direction through the gutta percha to the water and earth. It may be objected to this conclusion, that practice proves the contrary, inasmuch as if this be true, a telegraph line in the air could only be worked a comparatively short distance; but it must be remembered that the posts sustaining the wire are from twenty to thirty feet in hight, which would make the "air covering" or cylinder, so to speak, around the wire, a diameter of forty to sixty feet, instead of two inches as in the other case.

To the direct resistance offered by the wire itself, must be added the inductive resistance of the element—salt water—surrounding the cable. In illustration I quote from page 543 of the above named volume, the . . . . "experiments made by Dr. Faraday with the Telegraphic lines of wire between London and Manchester. This wire, which is 1400 miles long, is buried in the ground, and consists of four wires, each 350 miles long. At the Manchester station, the extremities of the first and second wire were united, and also the extremities of the third and fourth. At the London station, a galvanometer was attached to the end of the first wire; the ends of the second and third wire were united by a second galvanometer, and at the end of the fourth wire was attached a third galvanometer, communicating with the ground. The first galvanometer was then put in connection with one of the poles of a pile, the other pole of which communicated with the ground. The needle of the first galvanometer immediately deviated, but that of the second did not move till after a sensible interval, and that of the third a little later still. About two seconds elapsed before the electric current was propagated from the first to the third galvanometer."

Upon cutting off the communication from the pile, the galvanometers returned to zero in the order they had been deflected; and the same paragraph goes on to say:—

"With a telegraph wire suspended in the air, the three galvanometers deviate from and return to zero almost exactly at the same instant."

When we consider what great care was taken to insulate, and how much further removed these subterranean wires were from the earth, than in the submarine cable from the water, and the much greater inductive resistance to passage, which would be offered by the salt water surrounding and in actual contact with the cable, than by that of the earth, and the enormous pressure which would make the contact the more perfect, the two resisting forces of the wire and water, to overcome the counter resisting force of the gutta percha appear to afford well grounded fears for success.

Had caoutchouc been used for the covering instead of gutta percha, except so much of the outer covering as might have been preferable to gutta percha in order to resist cutting and abrasion, much would have seemed to have been gained, as the former substance possesses more valuable properties as a resistant than the latter.

Another view of the subject to which I have never seen any allusion, is the constantly varying temperature of the element in which the cable is to repose. Considering the elevations and depressions of the ocean's bottom and the heated nature of the Gulf Stream and other inter-oceanic currents, the variations of temperature to which it will be constantly subjected, will be at least 25° to 30° Fah., as shown by Maury in his "Physical Geography of the Sea," and by others. The practical telegrapher will see in this a formidable enemy to uniformity of the passage of the electrical current. It is well known that the colder the weather the more perfectly can a telegraphic apparatus be operated upon, while in the extreme heat of summer the current is so feeble and so constantly changing, caused by hot and cold currents of air, as much to impair good operation, and this, too, where the probable variation in temperature along an entire line of five hundred or a thousand miles would not exceed ten degrees at any given time. In connection with the subject under consideration, this becomes a very serious question, as Sir H. Davy "found by several striking experiments, that the electrometer became most sensibly affected by changes of temperature in the wire transmitting the charge, and whether by the common means of heat or cold directly applied to it, or otherwise, by means of an electrical current; so that it does not appear to be of any consequence how the heat is derived by which the conducting power is diminished. Hence it follows that the heat excited in a metallic body during the time of its conduction would tend to impede the transmission of the electrical current."—[Enc. Brit., Vol. 8, page 541.

On the other hand, "it has been long known that imperfect conductors have their conducting power increased by heat; gases, charcoal, glass, ice, and resins, when melted, are proofs of this;" [ibid. page 540,) whilst the water that surrounds them has its conductability somewhat increased by heat, although the variation in this is but slight, according to Dr. Ritchie and Marianani.

If what has been written above shall have the effect to draw the attention of others more capable than myself to the solution of these supposed difficulties, I shall be gratified.

E. F. Barnes.

Buffalo, July, 1856.

**Recent Foreign Inventions.**

*Napping Cloth.*—Sir Charles E. Grey has taken out a patent for raising the nap of, and dressing woolen goods, by substituting a new material for the common teasels, which have been used from time immemorial for this purpose. He employs the prickly parts of plants known in the West Indies by the name of "nicker bush," and by some botanists called *Guilandina Bonduc.* These prickly burrs are stated to be far superior, for napping, to the teasels, and can be obtained in any quantity, and are cheaper.

*Fan Parasols.*—Alexander Forot, of Paris, has secured a patent for making a parasol that can be folded into the form of a fan instead of folding it in the common manner. A small plate of brass is attached to the end of the shank of the parasol, and on the two sides of this plate two other plates are hinged. To these latter the ribs of one half of each plate of the parasol are secured by joints, which only allow them to move in the same plane of the plate. The two sides of the parasol fold together like a fan, and the shank or handle is jointed, to fold between the two in the usual manner.

*Steam Boilers.*—Thomas D. Duppa, France, patentee.—This invention consists in arranging and combining several upright cylinder boilers in a circle. Each boiler has its furnace at the lower end. At the upper part of each fire-box a series of tubular flues rise to the upper part, where they communicate with a chamber which is surrounded with the steam in the upper part of the boiler. The heated air and products of combustion then pass down from each boiler to the outside of a cylindrical vessel, into which the steam from the series of boilers is conducted, then they pass off to the chimney. The object of this arrangement of boilers is to superheat the steam, and economise horizontal space, by employing a number of vertical boilers instead of horizontal ones. Large boilers should never be placed vertically. They are too heavy to be supported on a narrow base. For a series of small boilers the above arrangement appears to be pretty good.

The subject of steam boilers appears to engage much attention in Europe at present.—Why, we really cannot tell. Quite a number of patents have been taken out within the past year for improvements (so named) on them in England, and the number of the London *Engineer* for July 4th, records the claims of four new patents—none of them of much consequence. The fact, however, is an indication of a feeling among those interested in steam boilers, that they do not consider the present boilers perfect.

*Carding Machinery.*—W. Stevenson and William Crawford, of Lochwinnoch, North Britain, have obtained a patent for improvements in carding machinery, which appear to be novel and good. In its main details their carding engine resembles those in common use, having a feeding in and carding apparatus. The wool or cotton passes through the machine in the usual manner, as far as the main carding cylinder, but instead of doffing or removing the sliver, as at present practiced, a disk card is employed for this purpose.—This is a disk of metal covered with card teeth, and set upon a vertical rotating spindle in such a position that the card face of the disk works with a part of its area against or in contact with the wire card teeth on the horizontal main cylinder. The respective surface motions of the main cylinder and the disk card are thus at right angles with each other, and as the main cylinder revolves, the disk card revolving also across the path, as it were of the main cylinder card surface, strips and carries away the wool or cotton from the main cylinder. The fibrous material is thus carried round by the disk clear away from the main cylinder, and one or more doffing combs being arranged to work upon the disk card face, the fibrous material is stripped off the disk card, and passed forward to a duplex endless apron arrangement. The apron arrangement has a continuous forward traverse, in the usual manner, for the conveyance of the fibrous material away from the actual carding apparatus. But in addition to this traverse it has also a lateral vibrating action horizontally, for the purpose of giving a rubbing rolling action to the fibrous material, to complete the sliver or roving. And to give greater effect to this slubbing rolling process the endless aprons are made double, the fibrous material being passed along between the two contiguous lengths of aprons, the lateral action of which is in opposite directions, and gives the requisite rubbing rolling action to the fibers, and condenses the slivers for further preparation and manufacture. And to aid the rolling or condensing action for solidifying the sliver as it issues from the endless aprons, it may be passed through a revolving tube, for the purpose of adding a further condensing twist to the fibers. Instead of traversing aprons, duplex action rollers may be used for traversing and rolling the slivers.—It is intended to employ this improved machinery for various textile manufactures, but it is particularly applicable in wool-carding, so as to produce slivers of any length in a convenient manner.

*Purifying Coal Gas.*—W. Basford, London, patentee.—This inventor passes coal gas during the process of its manufacture, through charcoal saturated in lime water kept in a heated state. The common method of purifying the gases, is simply to pass it through milk of lime—thick lime water. The above described process is stated to separate the impurities better than cold lime water alone.

**Pear Tree Oil.**

From experiments lately made with the fruit of the pear tree, an account of which appears in the Society of Arts *Journal*, it seems probable that a new substance may be brought into use, possessing considerable commercial value. According to the analysis of Dr. Hoffman, the oil expressed from the seed, when divested of its peculiar bitter taste, may possibly be made a substitute for olive oil as an article of food. In illuminating power the oil is not much inferior to the average quality of sperm oil.

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# New Inventions.

### Important Patent Case.—Page's Saw Mill.

About a year ago, considerable excitement was caused among the saw mill owners and manufacturers of saw mill machinery in Southern and Western New York, by the prosecution of no less than a hundred of them for an infringement on the patent of George Page, of Baltimore, Md., for the combination of the vibration of the circular saw arbor, with the use of guides near the edge of the saw. A convention of the parties was held at Elmira, N. Y., shortly after the notice of the suits had been served upon them, and it was resolved to contest the claim set up by Mr. Page. A large number of those prosecuted, however, finally compromised the matter, but thirty-five stood out, and preferred to abide by the decision of the Court. The cause were set down for the last term of the U. S. District Court, Northern Circuit, New York, Judge Hall presiding, in Canandaigua.

The suit against Elijah B. Georgia, was brought up on the 16th ult., and occupied the attention of the Court for three days. On the 19th, the Jury brought in a verdict in favor of the defendant; the testimony of several witnesses went to prove that the invention claimed was in use in New York before Mr. Page invented it.

Mr. Page, we understand, will carry the case up to the United States Supreme Court. He claimed $100 for every saw used on the "combination" principle. Witnesses were brought from all parts of the Union to give testimony in the case, which, as a matter of course, elicited much interest.

The foregoing is the substance of an article in the *Elmira* (N. Y.) *Times*.

### Atmospheric Propeller for Steamers.

The Philadelphia *Ledger* describes an experiment made in that city on a model boat two feet long, propelled by the action of wings or fans in the air, an improvement of Mr. Thos. Silver, the inventor of the marine governor. The boat is to be furnished with a steam engine, to which is attached four fans, with the handles placed in a hub, upon a spindle, the whole forming a mechanical power, similar to the screws now used as propellers. It is intended to use the air, instead of water, as the fulcrum for the fans to work upon, making up for the difference in density between the air and water, by a greater rapidity of motion.

"The inventor claims that for canal purposes this mode of propulsion would be far superior to the ordinary water-wheel in consequence of the non-agitation of the water, which would prevent the washing of the banks, a serious injury, which always results in the use of steam power."

To employ the air as a medium of steamboat propulsion, in place of the submerged propeller, the propeller will require to be of great proportions, and driven with an immense velocity. A surface velocity of such a propeller, amounting to 1760 feet per minute, will only exert a pressure of about 2 lbs. on the square foot.

### Meeting of the American Association for the Advancement of Science.

The next meeting of this Association will be held on the 20th inst., in the city of Albany, the capitol of New York. It is expected to be the largest and most attractive meeting of the Association ever held. The State Geological Hall and the Dudley Observatory are to be inaugurated on the occasion. The latter is named in honor of its great patroness, Mrs. Dudley—a wealthy widow lady.

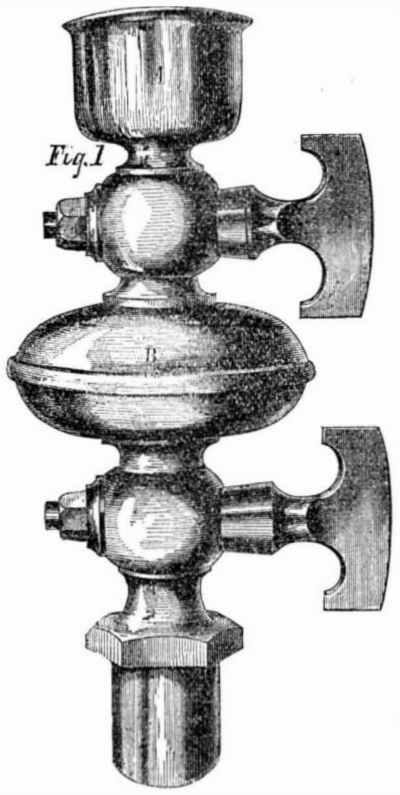
In order to give *eclat* to the meeting, some of the citizens of Albany selected Mr. John Gavit to proceed to Europe some time since, with invitations to a number of eminent *savans*, some of whom are expected to be present. Their expenses are to be defrayed by those who invited them. Neither the Observatory nor the Geological Hall, are at present in a fit state for inauguration and if they are not properly fitted up, (and this, we believe cannot be done) when the Association meets, it would redound more to the honor of the people of Albany to postpone such ceremonies, and allow the attention of the members of the Association, to be wholly directed to the reading of papers and the discussion of scientific questions—which are the real objects for which the Association holds its annual meetings.

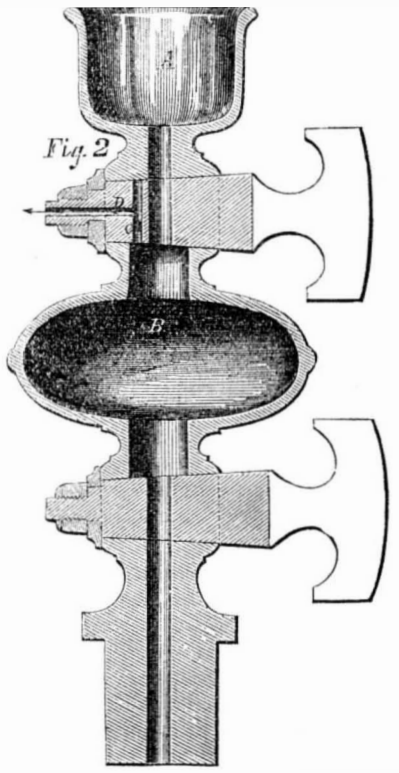
Our readers, as usual, may expect brief and clear reports of useful papers read at the meeting.

### Mechanics Wanted.

The Paducah (Ky.) *Democrat* says: "There are now needed in Paducah 150 to 300 mechanics, such as house and ship carpenters and joiners, as there are now lying here about 40 steamboats, the majority of which are to be repaired. There are also needed here coopers, painters, &c., all of whom can obtain the highest wages in the United States."

## IMPROVEMENT IN GLOBE OIL COCKS.



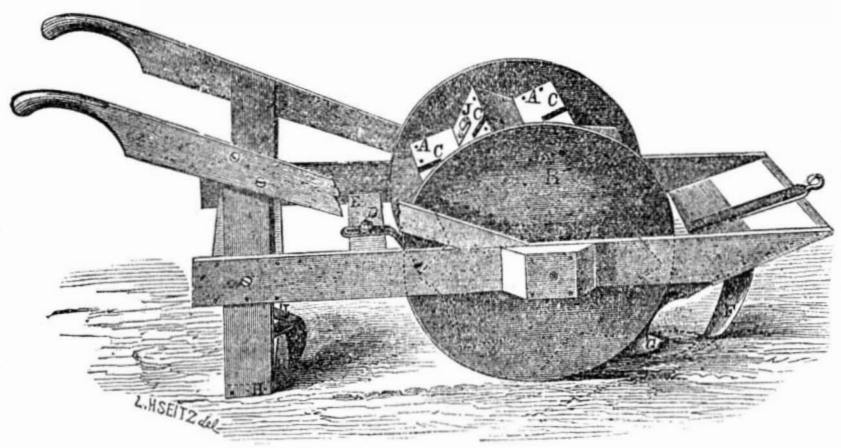

Improved Oil Cock.

The ordinary globe oil cocks are furnished with a third faucet, attached to the central oil chamber, for the purpose of permitting the escape of the air when the oil enters said chamber. In the present improvement only two faucets are employed, the instrument being thus considerably simplified and cheapened.

Figure 1 is an external view of the improvement, and fig. 2 a side sectional elevation. The oil is introduced at the cup, A, and flows down into the globe chamber, B. Of course there must be vent for the air in B, else it could never fill. For this purpose two holes are drilled at right angles opening into each other, as at C D, the arrangement being such, that when the upper faucet is open, so as to permit the ingress of oil from A, the openings, C D, will afford the proper air vent for chamber B, as indicated by the arrows. When the upper faucet is shut the vent openings will also be closed. The lower faucet may be then opened and the oil will fall into the steam cylinder.

The evident convenience in use, simplicity and economy in the manufacture of this invention, will commend it to the attention of engineers, and others interested in such matters. We are informed that it gives much satisfaction to all who have it in use. The inventor is Mr. Richard T. Crane, Chicago, Ill., of whom further information can be had. Patent applied for.

## NEW COTTON SEED PLANTER.




Improved Cotton Seed Planter.

Our engraving represents an improvement in machines for planting cotton and other seeds, invented by Mr. J. A. Stewart, of Mitchellsville, Tenn., and patented July 1, 1856. It consists of a hollow drum, A, made in zig-zag form and placed between a pair of wheels, B B. The drum revolves with the wheels. The seed to be planted is contained within the drum. The apex of each corrugation is slotted, as at C, and the grain falls through these slots, into the furrow. D is a clearing rod, attached to the cross bar, E. Rod D projects forward into the slots, C, and keeps them clear from all obstructions that might prevent the proper discharge of the seed.

The furrow is opened by means of an opening knife, F, and a shovel share, G, attached to the front end of the machine. A covering board, H, extends across between the legs of the machine; I I are adjustable harrow teeth, attached to the covering board, H. These teeth serve a useful purpose in assisting to stir the ground and cover the seed. The seed is introduced at J, one of the flat boards of the corrugated drum being hinged for that purpose.

This machine is very simple in construction. There is an entire absence of moving valves and levers. We have described it as applicable to planting cotton seeds, but it may be used with equal success as a corn planter, the only change necessary being the attachment of slides, so as to diminish the size of slots C.

We are informed that the invention has been thoroughly tried, and found to operate with entire success, both on even and rough ground. It distributes cotton seed with certainty and regularity, the quantity sown being varied at will, by altering the position of the clearing rod, D, setting it further in or out. It works equally well in windy or calm weather, on dry or moist soil. It deposits and covers the seed at a uniform depth, thus insuring an even growth and ease of cultivation. We are informed that one hand and a mule will do the work of five hands and three mules, laboring in the ordinary way, as the machine is, in a measure, a substitute for the harrow. Cost of construction quite small. Address the patentee, as above, for further information.

### Artificial Ears.

MESSRS. EDITORS—The result of some experiments lately performed, induces me to lay before your readers, in a brief manner, a device, convenient and effectual, for the amelioration of partial deafness. The ordinary ear trumpet involves the necessity of constant handling, and is often an incumbrance. From these facts, many persons, who would be benefitted by its use, discard it altogether. The plan I propose, is to make a short delicate ear trumpet of some light suitable material, say gutta percha, india rubber, or simply waxed linen, cambric, or other goods, with a stem of such shape and length as may fit easily in the meatus of the ear, and allow the bell-shaped portion to turn forward. One of these in each ear, with the expanded part of it two inches in diameter, well adjusted in the ear, will very considerably (probably fifty per cent.) increase the power of hearing, if the speaker is before the individual addressed. At the same time it may be entirely concealed among the artificial flowers and ribbons worn in a lady's head-dress, and made to resemble a flower so much as to be ornamental. Each artificial ear need not weigh one dram, nor cost fifty cents, and may be fixed upon the head-dress, so as to be completely adjusted and kept in place by the latter. The particular shape and size will vary in different cases, and will readily be found out upon trial. A gentleman afflicted with partial deafness may have his artificial ears constructed from four to six inches in diameter, if necessary, and of such light materials that they can be fixed to his hat brim, and worn without any inconvenience whatever. These artificial ears, thus made and worn, will enable many persons to enjoy a conversation with a friend, listen to the sermon on the Sabbath, and be aware of every thing of an audible character transpiring around them, nearly or quite as well as if their hearing was unimpaired.

W. H. BYFORD.

[The above is a good idea, and has been adopted pretty extensively within a year or two past by those afflicted with slight deafness. Mr. E. G. Hyde, No. 15 Maiden Lane this city, took a patent on an implement of this kind in May, 1855.

Dr. Byford has our thanks for calling our attention to a subject which interests so many. —[ED.

### Hydro-Steam Engine.

This is the name of a new engine by John Ryle, of Paterson, N. J., which is somewhat praised in the *Weekly Guardian* of that manufacturing and enterprising city. It consists of two steam cylinders yoked together, and working two pistons, which receive their steam on the one side only, while on the other side they are in contact with water, which they force like pumps through a small turbine wheel. This wheel is driven with a high velocity, in order to obtain great speed on it without the use of gearing to drive intermediate machinery.—This is the improvement claimed.

If the water in contact with the steam cylinders is of a lower temperature than the steam, there will certainly be a great loss of heat by absorption. The use of two cylinders —single-acting in place of one double-acting —and a water wheel driven as described, to supersede a simple belt and pulley, does not appear to be a happy method of improving the steam engine.

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Scientific American.

NEW-YORK, AUGUST 9, 1856.

### Accidents.

Our country has acquired a most unenviable notoriety for what are termed *accidents*,—such as destruction of life and maiming, by explosions and burnings, on steamboats; collisions on railroads and steamers. Now if an accident simply means a calamity, against which human care, knowledge, and foresight could not provide, then very few such occur in our country; and the term in general is wofully misapplied. Year after year, since the introduction of steam navigation and railroads, the press has teemed with accounts of dreadful conflagrations, explosions, and collisions, and the remorseless destruction of human life and property. The press, the pulpit, and the forum have thundered against these calamities, and have characterized them as crimes; but they still go on. The groans of the dying and wounded, and the sighs of widows and orphans have gone up against them from every corner of our land; but they do not cease. Are we a reckless, stupid, and cruel people? We would not like to be so charged by the people of another country, but if we abnegate our pride, we shall soon see that we are justly liable to these charges. What would we think of the man who in his great haste to reach the end of a journey, overlooked all the difficulties in his path, and made no provision to obviate or overcome them, but rushed recklessly onward, in sunshine and darkness, tumbling down precipices and falling into rivers, bruising or perhaps drowning himself? We would look upon him as one both reckless and stupid. And is this not equally true of our methods of traveling by steamboat and railroad? It is; we cannot deny it. We are not a cruel people —very far from it—for no people have deeper sympathies for the distressed and suffering; but then the impunity with which we have allowed persons to escape just punishment who, by misconduct and recklessness, have been the cause of dreadful calamities, leaves our conduct open to one of two charges, viz.—sympathy with crime, or disregard for the injured and suffering.

Two weeks since we published the account of a railroad collision and the burning of a steamer, by which about one hundred persons lost their lives, and more than that number were wounded; and now we have to record an explosion on the steamboat *Empire State*, on the night of the 20th ult., on Long Island Sound, and the burning of the steamboat *John Jay*, on the 29th, on Lake George, by which casualties, no less than twenty persons have lost their lives, and a number of others have received dangerous injuries.

From reading the accounts of these catastrophies, we are convinced they could have been prevented by care and forethought, and so could most all accidents. Last year the number of accidents were comparatively few, but this year, those who have charge of the public means of travel, seem to be actuated by an increase of recklessness and a greater disregard of life. When a great public accident, so called —occurs, a great excitement usually exists for a short period against those who have been the cause of it, but it soon dies away,—the public mind becomes callous, and those who have caused it are suffered to escape punishment, for nobody looks after them. Thus it is that year after year, the same round of tragedies are repeated, and will be repeated until the public awakens to a true sense of its duty. No strange and wonderful apparatus are required to make public travel more safe; the means to do so are well known, but not generally applied.

It is for the people, who are the makers of the law, to apply the remedy. The people of Europe feel a conscious security, when they travel on their railroads and steamboats; our people do not. The means of travel can be rendered as safe in the United States as in England, and it is criminal in us not to render them so. The lives of our citizens are as valuable as those of any other nation.

### Paper and Paper Making.

In 1854, when printing paper increased in price two and a half cents per pound, owing to the difficulty of obtaining a sufficient supply of cotton and linen rags for its manufacture, it so affected the publication of newspapers in our country and Europe that a number of them were forced, for a period, to curtail their dimensions. This excited the public mind, and appeals were made to chemists and inventors to institute experiments, and endeavor to discover a cheaper substitute; while the proprietors of the London *Times*, who had lost $100,000 by the rise in its price, offered a reward of $5,000 for a new, cheap, and available material. In a very short period after this, scores of persons were reported as having discovered methods of making white paper from a great variety of materials, such as different grasses, plants, woods, &c., and these achievements were sounded forth as notes of victory—that the great object had been accomplished. These were great mistakes, for the great object to be accomplished was not the production of paper of other materials than cotton or linen rags, but a *cheaper* paper, of equal, if not superior quality—from any material. The price of paper has fallen somewhat since 1854, but the impetus given to the public mind to produce a substitute for rag made paper has not yet ceased to exert its influence, nor have mistakes ceased to be repeated.

By the number of the London *Engineer* of the 4th July, ult., we find the record of two new patents granted for manufacturing paper; one to Joseph Barling, Eng., for making paper from the roots of hop vines, and the other to W. G. Plunket and John Bower, Ireland, for manufacturing it from the leaves, stalks, and roots of beets and burdocks. These patents are not of the least value whatever, as paper cannot be manufactured as cheap from these materials as from pure cotton, even before it is made into rags. These patentees have made the same mistake that scores of others have, who supposed they had accomplished the grand object by merely substituting one material for another. There are many persons who know how to manufacture paper from almost every tree and plant that grows, and the process of doing this is neither complex nor secret. It simply embraces the well-known method of treating those plants or woods first with a caustic alkali to remove the resin in them—as from pine wood shavings —or the silicon from them—as in straw,—and then pursuing the same processes that are commonly employed in making rag paper, viz., washing, bleaching, and reducing to pulp. And it cannot but be somewhat mortifying to many recent inventors of paper, from what they supposed were new materials, to be told that there is nothing new about them.

A neat pamphlet on "Paper and Paper Making," got up *con amore* for presentation only, by Mr. Joel Munsel, Albany, N. Y., throws a vast amount of light on this subject, and presents a very clear and condensed history of paper making. We learn from it that in the sixth century the Chinese made paper from rice straw; in 1751, M. Guettard, of France, produced specimens of paper made of the bark, leaves, and stalks of various plants, shrubs, and trees; in 1756, during a scarcity of rags in Germany, attempts were made to make printing paper from straw. The circumstances of that period were very similar to those among ourselves in 1854. In 1765 Jacques C. Schoeffer, of Rattisbone, published a book upon Paper Making, which was printed upon different kinds of paper made without the use of rags, such as cotton of the poplar tree, hornet's nests, sawdust, moss, beech, willow, aspen, mulberry, and pinewood, and also of hop vines, the very material for which Mr. Barling mentioned above has secured a patent; also from burdock, the very material of Messrs. Plunkett's and Bowers' patent; it also contained paper made from broom corn, thistle stalks, cabbage, and barley and wheat straw. In 1776—at the time of our Declaration of Independence—a volume was printed in France upon white paper made from the bark of bass wood, and at the end of it were twenty specimens of other paper made from as many different vegetables.

From these facts we are inclined to the opinion that very little that is new, if useful, has been discovered in paper making during the recent excitement on the subject. We know that some very good white paper has been made from straw, and that the Philadelphia *Ledger* and Saratoga *Whig* have been printed on paper mostly composed of straw pulp, yet when we find that Matthias Koops made good printing paper of straw alone in 1800, and that he was the first who made printing paper from old, waste, written and printed paper—a great invention—we think that straw paper must undergo some further improvements before it will supersede rag-made paper, which still holds its place in the printing art.

We have presented the foregoing for the benefit of those who may still be directing their attention towards improvements in paper making. Let them ever keep it before their minds that the grand desideratum respecting such improvements is not merely the application of a new material, but mainly the production of good and cheap paper. We do not present such views for the purpose of checking or restraining efforts to improve the art of paper making, but to direct efforts for such improvements to the right point of action. We conceive—and it is demonstrable—that no greater benefit could be conferred upon intelligent nations than some discovery whereby good printing paper could be produced in abundance at one half its present cost. Such a discovery would lead to an astonishing diffusion of cheap information; it would lead to greater intellectual activity, and as a consequence, a further advancement in learning and knowledge. Will such a discovery yet be made? We think it will; and it is worth laboring for by all those interested in paper making and paper using, and who wish well to their fellow-men.

There are 750 paper mills in the United States, producing annually 250,000,000 lbs. of paper, which at 10 cents per pound amounts to $25,000,000. If reduced in cost to 5 cents per pound, the saving would be $12,500,000.—To produce this quantity of paper it requires 405,000,000 lbs. of rags, valued at $16,200,000. Great quantities of these rags are imported from abroad, and oftentimes infectious diseases with them. An improvement in paper making that would at once supersede the necessity of importing rags would be a great blessing to our country.

### Drigg's Pianoforte Improvements.

Several weeks since we illustrated and described the above invention in our columns, and chronicled at the same time the fact that English and French patents had been applied for. As soon as the valuable qualities of the invention became known in England, an onslaught was made upon the patent by interested parties, resulting in a vigorous attempt to prevent the grant of the great seal. This opposition was, of course, strongly resisted. Testimony was required and given before the Patent Commissioners, and they have given a decision in Mr. Drigg's favor. He has come off with flying colors. The great seal having been granted, his invention may now be considered as fairly planted on the other side of the Atlantic.

### Recent American Patents.

*Machine for Planing Iron.*—By E. C. Cleveland, of Worcester, Mass.—Consists in the employment of a friction box connected by gearing with the screw which operates the tool stock, the friction block being provided with adjustable dogs. The above parts are so arranged that the tool may be adjusted or fed at varying distances as desired, at each stroke of the bed, according to the nature of the work.

*Improved Rig for Sloops and Schooners.*—By George W. Gerau, of Brooklyn, N. Y., opposite New York City.—Consists in having the mainsail of triangular form attached to the lower boom as usual, and having a single block or halyard attached to the peak or upper end of the sail, for the purpose of raising it. The lower end of the topsail is attached to the outer end of the lower boom, the upper part being attached, as usual, to the topmast. By this arrangement the mainsail is made rather smaller than usual, and the topsail rather larger. The gaff boom is dispensed with, and also one set of halyards, rendering the sails easy to manage or work, and materially reducing the expense of rigging fore and aft vessels.

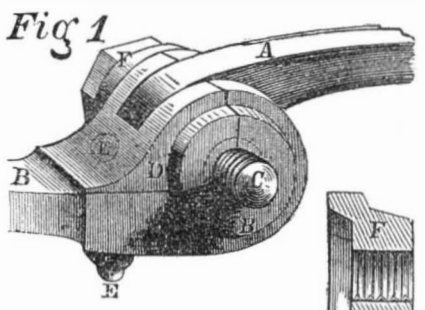
*Improved Valve Motion.*—By William H. Guild and William F. Garrison, of Brooklyn, N. Y., opposite New York City.—This invention consists in certain novel, simple, and effective means whereby the valve is caused, as the stroke of the engine piston terminates in either direction, to have suddenly imparted to it the necessary movement to admit steam to act on the piston, to effect its return. The steam is made to act on a piston which is fitted to work perpendicularly to the valve in a cylinder forming a part of the valve driver or device employed to drive the valve. The piston is supported against the pressure of steam by a rocker, or its equivalent.

*Improved Coal Scuttle.*—By James Myers Jr., New York City.—The ordinary coal scuttles are made of sheet iron, and the bottoms soon rust off at the joint between the bottom and sides, owing to the accumulation of moisture or water at that point.

This invention consists in having cast-iron bottoms provided with flanches at their edges, to which flanches the lower part is riveted.—The cast-iron bottom is made concave, so as to receive the water which the coal contains. The water is thus prevented from reaching the joint, and the scuttle is rendered far more durable, without any increase of expense in the manufacture.

*Improved Carriage Clip.*—By Francis J. Flowers, of Brooklyn, N. Y., opposite New York City.—In our engraving the iron or goose-neck attached to the shafts, is indicated by A, and the iron which receives the goose-neck and fastens it to the axle by B. Bolt C is welded to and forms a part of A. B is made in hook shape, and receives A with the fixed bolt, C, in its center. A cap piece, D, is then placed upon B, which secures C, and completes the clip. E is a bolt for holding D. D is further secured by the cap nuts F, which fit over the shoulders formed on B and D, a washer being interposed. The nut screws upon the bolt, C, as shown. Fig. 2 is a sectional view of nut F.

Fig 1



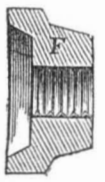




Fig. 2

This improvement prevents all rattling of the clip, which is avery common objection, and it forms a strong, cheap, convenient, safe, and durable fastening. The arrangement is such that there is little or no liability to accidental loosening or separation, although, when desired, it may be quickly taken apart. It is an excellent improvement. The inventor is a practical carriage maker, and a prominent contributor to *Saladee's Coachmakers' Magazine.* Patented July 8, 1856. Address the inventor as above for further information.

*Carving Machine.*—By Nelson Ruger, of West Farms, N. Y.—This invention relates to a new and improved machine designed chiefly for carving portions of furniture, or ornamental pieces to be attached thereto. A drawing would be required to explain the parts.

*Improved Printing Press.*—By Thos. Parkes and Alfred Parkes, of Brooklyn, N. Y., opposite New York City.—Consists in the employment of rotating printing cylinders fitted in vibrating bearings, and connected by gearing with a cylinder having flat forms attached to its periphery, whereby impressions may be taken from flat forms on a rotating cylinder in an expeditious and perfect manner. Consists, second, in a peculiar means employed for presenting the sheets to the printing cylinders whereby both sides of the sheet may be printed

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before they leave the machinery. Third, in a peculiar device for feeding two or more printing cylinders from one feed-board, and causing the sheets to fall, in one pile, from the machine. Fourth, in the employment of an elastic or yielding feed and fly board.

*Improvement in Saws.*—By T. T. Prosser, of Oconomowock, Waukesha Co., Wis.—Consists in straining the saw by placing it between levers, which work upon pivots, and are adjusted by set screws, and having the lower end of the saw attached directly to the pitman, the upper end of which bears against the under side of the lower frame. The above parts are so constructed and arranged that the saws may be perfectly strained and thrown out from the kerf, which is thus kept free from saw dust.

*Pickpocket Detector.*—By S. W. Ruggles, of Fitchburgh, Mass.—This contrivance consists externally of a case, resembling that of a watch in size and shape. It has a fob chain or string, and is worn in the pocket like a watch. Within the case is a bell and spring hammer, the latter connected with the fob chain. The supposition is, that the thief will suppose the fob chain to be attached to a *bona fide* watch, and will accordingly pull the chain in order to obtain the prize. But instead of getting the watch, the *watch* gets him. The pull sounds the alarm bell, the owner of the watch grabs the rogue, and the policeman conducts him to limbo.

*Improved Smut Machine.*—By G. H. Starbuck and L. D. Gillman, of Troy, N. Y.—Consists in a combination of conical plates or funnels, rotating screens, etc., whereby the grain is most thoroughly cleaned, and delivered free of all impurities.

*Improved Turning Lathe.*—By G. W. Walton and H. Edgarton, of Wilmington, Del.—Consists in the employment of intermittingly rotating feed rollers, and expanding cutters fitted within a hollow rotating cylinder. This invention is intended for turning articles of irregular forms, such as ornamental table legs, balusters, tool handles, &c. It is said to perform the work with great excellence.

*Stave Machine.*—Charles Hoyt, of West Aurora, Ill.—Relates to a new device for jointing the staves and giving them the proper shape or swell. The invention consists in attaching the cutter heads to vibrating frames, which are operated by means of jaws, inclined planes or wedges, and springs, whereby the cutter heads are expanded and contracted so as to perform the required work in a rapid and excellent manner.

*Machine for Making Gutta Percha Pipes and Covering Telegraph Wires.*—By James Reynolds, of New York City.—This invention is for the purpose of forming tubing, or coating wires—both operations being substantially alike—by forcing the gutta percha, while rendered plastic by heat, through a die. The necessary pressure for this purpose is applied by a piston working in a cylinder, in which the material is placed and kept heated, or by other suitable forcing apparatus.

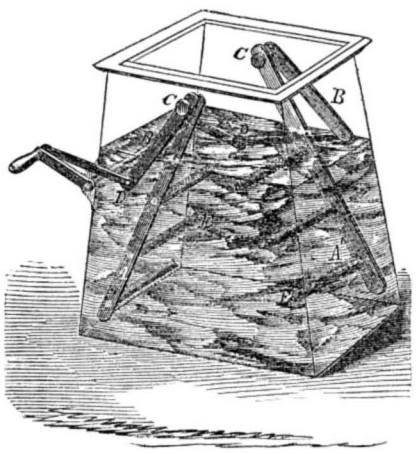
One improvement consists in connecting the cylinder with an air pump, or other suitable exhausting apparatus, whereby any air remaining in the said cylinder after it has been filled as full as possible with gutta percha and closed, may be extracted before applying the pressure. The manufactured article is thus rendered free from blow holes, and is perfectly firm. This is a result of great importance for small tubing and the covering of fine wire.

A second improvement consists in arranging the die and core by which the tube is produced or the covering of the wire performed, in a position transverse to the direction in which the piston works to produce the pressure, to allow a hollow core to be used for the admission of air into the tube as fast as it is formed, and also to prevent it from collapsing by the formation of a vacuum within. The same arrangement also permits the passage of the wire through the die when it is being covered by the percha.

A third improvement consists in providing the stomach in which the die is placed, with an opening, to allow of the constant escape of a certain quantity of material during the operation. By this means the quality of the manufactured article is rendered more uniform. Without such an arrangement it is almost impossible to produce small tubing or cover fine wire with any degree of uniformity of thickness.

A fourth improvement consists in the employment of a continuously revolving trough of water, suitably arranged to receive the tube or covered wire as fast as it leaves the die, and coil it up in the water to cool it, to prevent the coils from sticking together.

*Improved Churn.*—By John Lamb, of Callicon Depot, Sullivan Co., N. Y.—In this improvement the churn box is made of wood in the usual manner, but in our cut it is shown as if it were composed of glass, in order to exhibit more clearly the arrangement of the interior parts.




The invention consists in the employment of two swinging dashers, A A′, which are suspended from pivots, C, within the churn and work in opposite directions. The beaters, E, of one dasher passing between the beaters of the others, whereby the cream is subjected to the requisite agitation or commotion, so as to produce butter in the shortest possible time, and with but a small expenditure of power.

The dashers, A, are connected together, and also connected with the crank by means of rods, D. When, therefore, the crank is turned, the dashers, A, move simultaneously in contrary directions. This is a very simple arrangement of parts. Patent applied for. Address the inventor, as above, for further information.

*Clover Seed Harvester.*—By C. B. Wheeler and Austin Bascom, of Steuben, Ohio.—Consists in the employment of a reel and cutters placed within a sliding frame, and an endless apron arranged within the body of the vehicle. By the use of this invention clover seed may be harvested with great rapidity from the standing stalks.

### Notes on Patented Inventions.—No. 17.

*Soap Manufacturing.*—This useful article, so necessary to cleanliness, health, and comfort, has been known and used in some form, for ages. The manufacture of that which is known by the name of soft soap is pretty generally understood. It is simply a compound of a caustic alkali and some greasy or oily substance. They are either boiled or kept together and frequently stirred under a moderate heat until they combine, and form a thickish ropy compound, very different in its nature from either of the two ingredients separately. The common way to make it is to use a potash lye, made by lixivating wood ashes; into this, grease is introduced and boiled until chemical union is formed between the two. A rude way to test the strength of the lye is by placing an egg in it; if it floats, the lye is considered of sufficient strength. Another method of making soft soap is to introduce the lye among the grease in a barrel, and keep stirring it, at intervals, for some days, out doors, during warm weather. The barrel (an iron cauldron is better) must be covered during the intervals of stirring. Fish oil boiled in lye until it assumes the consistency of honey makes good soft soap. This kind of soap is simple and easy of manufacture. It was used in all parts of the world long before hard soap was known. No glycerine is produced in making it, and from the same amount of materials a greater quantity is made than hard soap; hence it is the cheapest, and is, therefore, the most economical for washing coarse wool, dyed cloth, &c.

Most of our farmers make their own soft soap, using refuse fats and greasy matters for the purpose. They also make their own potash lye from their fire-wood ashes. Sometimes they experience trouble in making their soap—the contents of the soap cauldron will not thicken—the materials refuse to form into soap. In making their soap, some talk of good and bad luck, according to their success or want of it. There is no such a thing as luck or chance governing the laws of chemistry, otherwise they could not be laws. When soft soap does not readily form in the kettle by boiling, it is owing to one of two causes, viz., too much carbonic acid in the lye, or too much and too great strength of lye. If the ashes from which the lye is made contain numerous pieces of charcoal, and if they have been freely exposed to the air the lye will generally contain too much carbonic acid.—To remove this acid from the lye, slacked lime is generally put into the bottom of the leaches; but the best way to use lime is to stir about a handful to two gallons (it must be fresh slacked, or it will not answer) in the lye itself, then allow it to settle, and use the clear. The carbonic acid in the lye unites with the lime and forms chalk, which falls to the bottom, and leaves the lime alkaline-caustic. When soft soap is slow of forming, on account of the quantity and strength of the lye, the addition of some common salt has been found to remedy the defect and complete the process. The soft soaps are termed *potassa* soaps, the hard *soda* soaps, because the latter is made from the alkali soda, and the former from the alkali potash. Common salt is the chloride of soda—soda and chlorine—therefore, when salt is added to a very caustic potassium lye in the soap boiler, an exchange of bases takes place, the soda uniting with the fatty acid, and the chlorine with the potassium alkali. A harder or thicker soap is formed with the soda and fatty acid than with potash; many persons are acquainted with the practical results of the use of salt in soap-making who do not know the why and wherefore of its use.

Pure soap may be termed a *salt*, because it is the product of an alkali base and an acid. Numerous are the substances which have been and are still used to increase the quantity of soap. Some of these form curious mixtures. In July, 1837, D. E. Stillwell, of Utica, N. Y., secured a patent for converting hard into soft soap by dissolving 8 lbs. of common bar soap in four quarts of water, and adding to it, while warm, 4 ounces of the subcarbonate of soda. This was an improvement in the wrong direction.

On March 23rd, 1829, Arthur Dunn, of England, obtained an American patent for making soaps in a steam-tight soap kettle, when the liquor was boiled under a pressure of 57 lbs. to the square inch; he also claimed the addition of soluble glass.

To make common yellow soap he employed 700 lbs. of tallow, 300 lbs. of palm oil, 300 lbs. of common rosin, and 150 gallons of a caustic soda and silicate lye of a specific gravity of 1·10. These were introduced into the closed steam kettle, and boiled under a pressure of 57 lbs. for one hour, they were then drawn off into a cooler to cool down and to be cut in bars.

The soluble glass or silicate of soda, was made by taking 112 lbs. of small pieces of black flint, putting them into the steam-tight boiler, among 100 gallons of caustic soda lye, of a specific gravity of 1·10, and boiling them under steam pressure of 57 lbs. for four hours. It was then drawn off and cooled down, and used in the caustic soda lye to make the soap—no definite quantity was claimed. The above is not only information respecting the manufacture of soap, but also respecting a mode of making soluble glass—silicate of soda, and may be useful to many persons. Soluble glass can also be made by boiling sand or flint, in an open vessel, with a strong caustic lye. The use of steam (though not under pressure,) for boiling soap, was first applied in London in 1825. In 1830, two patents were granted to citizens of Baltimore, Md., for manufacturing soap by steam; they were of little importance.

In December, 1844, Mr. Dunn took out another United States patent for purifying and bleaching oils and fatty matters in soap-making. The process consisted simply in causing streams of heated air to pass through the fatty matter when combined with suitable saponifying materials.

In March, 1846, D. F. Albert, of France took out a U. S. patent for making soap by saponifying butchers' offals, by means of a strong caustic alkali. Our Indians, from time immemorial, have made a soap of the entrails and brains of animals and the lye of wood ashes,. They use this soap in preparing skins for moccasins, &c. The skins are pounded and also steeped in it, then dried, and afterwards smoked in a pit dug in the ground. Thus prepared they are always soft, pliable and resist the action of water better than common leather. On the same day a patent was granted to John K. Vaughan and Evan H. Everman, of Philadelphia, for a soap made as follows:—Take good yellow soap 900 lbs., water 2100 lbs., borax 75 lbs., common salt, 37 1-2 lbs., good glue 15 lbs., palm oil 10 lbs. The bar soap was first dissolved in the water in a boiler, then the other ingredients were added gradually, and well stirred; when the vessel was brought to a boiling point, the borax and salt were added last, stirred well, and the fire withdrawn. This was a method of increasing the quantity but not improving the quality of soap.

On July 27th, 1852, Wm. McCord, of New York City, obtained a patent for combining ammonia with soap, by the use of kaolin. In December, 1853, Ira F. Payson, of New York, also obtained a patent for the use of ammonia with other ingredients in the soap, to keep it moist.

In June, 1854, T. C. Taylor, of Camden, N. J., obtained two patents for making soap; one was for the use of the bran of cereal grains, dissolved in caustic alkali, and the other for dissolved potatoes—skins and all. They were used as ingredients of the soap. In January, 1855, R. A. Tighlman, of Philadelphia, was granted a patent for making soap under high heat and pressure with the use of carbonated alkalies—the high heat and pressure was patented by Dunn before.

Potato starch, glue, dextrine, ground flint, clay, bone dust, and many other substances, have been used in making soap, but not to improve its quality.

This subject being one in which every person is practically interested will be continued in our next number.

### British and French Rifle Shooting.

A rifle shooting match came off a short time ago near Paris between Captain Wellington Guernsey, late of the Turkish Contingent, and Lieut. Arnaud, of the Chasseurs de Vincinnes, for 500 francs a side. The distance was 150 yards, and the mark 25 pigeons for each.—Lieut. Arnaud used one of Minie's latest improved rifles, and Capt. Guernsey used one of the Enfield military rifles now supplied to the British army. Lieut. Arnaud killed eighteen birds, and Capt. Guernsey twenty-four out of the twenty-five in consecutive shots—missing the last only. Quite a number of French officers were present.

### Coke for Iron Smelting.

A correspondent writing to us from Athens, Ga., states that he is in the foundry business, and they use coke in smelting their iron for castings, because it is cheaper in that place than coal, but it causes a great deal more *slag*, and the castings are more brittle. He is desirous of finding out a remedy for this evil. We cannot conceive how the coke can generate more slag than the coal from which it is made. We can conceive how it may produce more brittle castings by the absence of volatile matter, thus leaving too much carbon in the metal when drawn off for castings. By keeping the molten metal exposed for a longer period to the blast in the furnaces, a portion of the carbon will be thrown off in the form of carbonic acid, and thus afford a partial remedy. Perhaps some one who has experienced the same difficulties, and who has discovered a remedy, may be willing to communicate the same to the public for the benefit of our correspondent, and many others who may be laboring under the same disadvantages. By the use of wood in the furnace, or some niter, &c., the evil may be remedied, but these will increase the expenses, and this is what is desirable to avoid.

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## TO CORRESPONDENTS.

C. C. of Ohio and others—M. J. Cook, of Detroit, Mich. whose advertisement—" 1000 young men "—appears in another column, informs us that he has promptly answered every one of his correspondents, whenever he has been able to make out their names. He is unwilling to consider himself responsible for letters miscarried or for those which lack the writer's name and residence. Mr. Cook disclaims all intention of making money out of three cent stamps. His business is to sell receipts for making ink, and various other chemical articles.

G. M. W. of Ill.—The securing of hubs, cranks, &c on axles, by heating and shrinking, is a very common practice, as we suppose you are aw re. And the heating has been effected by fires specially built for the purpose, substantially as you describe. We see nothing patentable in your plan.

P. T., of N. Y.—Legally an assignment for one patent does not hold good for another improvement. It is for you to decide whether the party you name is entitled to a share in the last grant. The withdrawal of an application for a patent does not render an assignment null and void.

H. W. W., of Mass.—We do not know of any machine for the specific purpose you name.

R. W. B., of N. Y.—Your device for an anti-friction box is not new. The combination of rollers with shaft journals, in order to diminish friction, is quite old.

P. & S. of Iowa.—For sawing and siding machines, also saw gummers, consult the back numbers of the Sci. Am. We have illustrated many excellent inventions, and have no special preference. The dynamometer can be applied to determine the power of an engine. This consists of a friction brake, weighted, or other device. Cannot inform you as to the planing machine patent.

A. P., of N. Y.—Full information, with engravings, respecting Artesian Wells, may be found in Vol. 8 of the Sci. Am.

G. T. B. E., of Me.—Steaming the green white oak in a box, for five or six hours, then exposing it to the air for a few days, will season it better and faster than by the old plan. The steaming is allowed to improve its quality. Use high pressure steam, about 30 to 50 lbs. pressure.

W. H., of Conn.—We do not know where you can procure a flexible pipe to be used to conduct the steam to an engine, that would be as durable as a metal pipe. As you merely wish to avoid conveying the steam through the trunnions of the engine; this can be done on oscillating cylinders with a metal steam pipe.

O. H. P., of Ohio—What is the anguentum composed of? We do not know what it is by the name.

A. W. D., of N. Y.—We are not positive respecting the action of the sponge which you mention; but the theory is plausible.

A. W. of Mass.—An overshot wheel should be built the whole hight of the fall; it will take 7 cubic feet of water per second, on a 50 foot wheel, to amount to 40 horse power—not allowing 25 per cent. for loss.

I. S., of Ohio—The terms royal blue and finishing spirits, are of very little consequence. The muriate of tin is the best royal blue spirits; and the nitro muriate of tin the best red spirits.

G. W., of Vt.—We cannot tell why it is that mercury and bismuth and lead injure the human system, when taken internally, as oxydes, for medicine; we only know that they do so. By proper dieting, bathing, &c., they may be removed from the system, but a skillful physician should always be consulted.

D. R., of S. C.—There is no paper published in our country exclusively devoted to the interests of manufacturing, giving the prices current of lumber—of ship and car timber.

R. H., Canada.—E. Daniels, Union, Broome Co., N. Y. patented in 1855 a bedstead for fractures of the lower limbs. See engraving in Sci. Am. July 21, 1855. Address the patentee for information.

A. M. S., of Pa.—There is as much silver in the sample of rock you have sent us as there is in a bowl of pure water. It is a poor kind of sandstone; do not be deceived with it.

W. L. W., of Tenn.—The per centage of power belonging to a turbine or any other kind of water wheel is the amount of force which it exerts when tested by a dynamometer, as compared with the ascertained power of the water. It is true, as you state, that many re-action wheels pass more water through the issues when running than when standing still; but there are makers of such wheels who will guarantee them to work up to 75 per cent. and above it. Now the main question is, do overshot wheels give out a higher per centage of water power? They do not.

J. J. H., of Ky.—There is no effectual method of keeping out flies from your store if your doors and windows are kept open. The best plan for you to pursue is to keep your articles of jewelry in tight glass cases.

H. B. N., of Ohio.—Elderberry wine is made by fermenting the juice. Add two pounds of brown sugar to every gallon of the cold juice; let it then be exposed in a tub for about a week; then put it in a cask filled full to the bunghole, and allow it to work off for a weak more. It should then be bottled or otherwise stoppered perfectly tight in the cask, and allowed to stand two months before it is used.

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Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Aug. 2, 1856:—

E. D. B., of N.Y., $25; J. R.. of Pa., $30; H. L. & Co., of Pa., $25; S. & M., of Wis., $25; D. G., of Ill., $30; W. P. M., of Wis., $25; E. P., of Conn., $25; J. B., of Ill., $25; C. E. G., of Ga., $25; J. B., of N. Y., $30; E. A., of Conn., $25; W. G., of Vt., $55; T. S. B., of Iowa, $35; P. D. M. C.. of N. Y., $30; H. A., of N. Y., $30; T. S., of Iowa, $25; A. R., of Ill., $30; E. G., of Ind., $30; E. F & W. L. B., of N. Y., $32; C. W. Jr., of N. Y., $25; E. K. H., of N. H., $27; A. S., of N. Y., $55; B. & C., of N. Y., $25; P. C., of N. Y., $30; G. J. S., of Pa., $25; A. B., of N. Y., $30; E. & P. C., of Pa.. $25; C. B. B., of Conn., $10; R. P. B., of O., $30; B. & C., of Ind., $30; V. R. A, Co., of Conn., $100; J. H. K., of N. Y., $25; B. M., of Pa., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, August 2:—

C. E. G. of Ga.; H. L. & Co. of Pa.; J. R. of Pa.; S. & M. of Wis.; E. P. of Conn.; W. P. M. of Wis.; E. B. B. of N. Y.; E. A., of Conn.; J. B. of Ill.; J. H. K. of N. Y.; T, S. of N. Y.; C. W., Jr. of N. Y.; E. K. H. of N H.; B. & C. of Ind.; J. N. R. of N. Y.; O. S. of N. Y.; R. V. J. of Pa.; L. H. S. of Mich.; G. J. S. of Pa.; W. G., of Vt.; B. M. of Pa.; E. & P. C. of Pa.; P. D. M C of N. Y.; T. S., of Iowa.

## Important Items.

New Edition of the Patent Laws.—We have delayed for some months the issue of another edition of the present Patent Laws in the expectation that Congress would most certainly at this Session, make some simple amendments to them—such as are earnestly sought for by inventors and patentees. As there is now little hope that any such changes will be made during the session, we have issued a complete edition of the laws, including the regulations of the Patent Office—copies of which can be had for 12 1-2 cents each. If any of our readers, who have ordered the laws and regulations, and have not received them, they will be promptly supplied upon renewing their requests by letter.

To the Unfortunate—We are no longer able to supply the following back numbers of the present volume: Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

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38 6eow JOSEPH L. BATES, Secretary.

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**W. P. N. FITZGERALD,** Counsellor at Law—late Principal Examiner in the U. S. Patent Office—has removed from Washington, D. C. to the city of New York, 271 Broadway, (corner of Chambers St.) As heretofore, his practice is confined to Patent Cases, which he will prosecute or defend, as counsel, before the Supreme and Circuit Courts of the United States, also before the Patent Office, or the Judges having jurisdiction of appeals therefrom. 29 lamtf

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# Science and Art.

### Destroying Pernicious Insects.

T. Glover, the distinguished entomologist connected with the Agricultural Department of the Patent Office, has lately furnished the National Agricultural Society with a most interesting essay on destructive insects and birds; and he enjoins our farmers to study their habits. He says :—

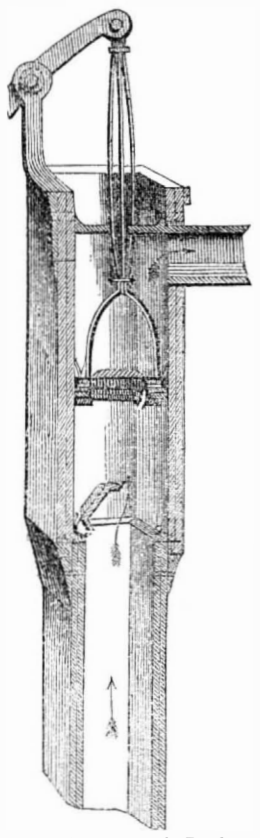
"A close study of the habits and transformations of any one of the pernicious insects (ball worm, wheat midge, caterpillller, &c.) by the practical and intelligent farmer would prove not only a source of great pleasure, as leading him to a keener sense of the beauteous and wonderful works of nature, as exemplified in the singular transformations insects undergo, before they assume the perfect or fly state, but also a source of great profit, as by experimenting upon them in all the stages of their existence he might perchance discover some practical method by which their extermination could be effected. Indeed, it is absolutely necessary that a farmer should be able to recognise the insects that destroy his crops, in all their various and wonderful transformations, before any effectual remedy can be applied; as in one stage of their life they may be suffered to live and enjoy themselves, nay, even sometimes be protected, whilst in another stage we persecute and destroy them by every means in our power. For example, the beautiful butterfly of the *papilio asterias*. Any humane and kind-hearted farmer, unversed in entomology, who should see his children chasing and killing the beautiful black and yellow spotted butterfly that was flitting joyously over his vegetable garden, in the spring or early summer, apparently leading a life of mere harmless pleasure, would, no doubt, reprove them for wantonly destroying such a pretty, harmless insect; and yet, if the truth was known, this pretty and much to be pitied insect is the parent of all those nauseous smelling green and black spotted worms that later in the season destroy his parsley, celery, parsnips, and carrots. Yet by merely crushing the parent fly at one blow early in the season, before it has deposited its eggs, he would be spared the vexation of either seeing his plants devoured and seed destroyed, or having the disagreeable task of picking off, one by one, some hundreds of caterpillars later in the season. This fact will be more apparent when I state how incredibly fast some insects multiply, especially in the warmer climate of the South, where there is little frost to destroy vegetable life, and there are several generations in one season. Dr. John Gamble, of Tallahassee, Fla., assisted by myself, dissected a female ball-worm moth or miller (an insect which in the caterpillar state is most destructive to cotton,) and we discovered a mass of eggs, which when counted amounted, at the least calculation, to five hundred, duly hatched, for the first generation, say one half males, the rest females; the second generation, if undisturbed, would amount 125,000, and the third be almost incalculable.

Now, these mother flies are not very numerous early in the season, owing to the birds devouring them, the rigor of winter, and various other accidental causes, and if practical means were found to destroy them as early in the spring as possible, the immense ravages of the second and third generations might be prevented. In one female (œceticus) case or hangworm, so destructive to the shade trees, I counted nearly eight hundred eggs, although the specimen was but small. Now were all these cases taken from every infected tree in the winter, when they can most easily be seen, owing to the fall of the leaf, and then immediately burned, the trees would be comparatively free the next season; and by following this plan for one or two years more, the work growing gradually less and less, the insect might finally be exterminated, inasmuch as the female never leaves her case, but forms her nest of eggs inside; and yet these noxious pests are suffered year by year to increase, when so little trouble would destroy them.—Other insects, again, have other habits, which, if fully known, would likewise lead to their destruction.'

### English Patents.

*Clarkson's Pumps, Masts, and Tents.*—The illustration (figure 1) shows one of the pumps which are formed of two thicknesses of thin planking, with a woven fabric placed between them, the whole being held together by an adhesive substance, thus giving greater strength and tensity than any other material. The wood being previously subjected to a process —to prevent atmospheric or other action of decay—gives greater durability, and is not subject to corrode, oxydize, or fracture as metal. These pumps can be made of any size, and curved to fit the section of a ship. to work between or above decks, and as a lift or force pumps.

Fig. 1.



In a trial at Portsmouth Dockyard, in January last, one of the patent pumps threw one hundred gallons of water in twenty seconds, whilst the Admiralty's pump required seventy-six seconds to throw the same quantity. It was also admitted that Clarkson's pump was worked with greater ease.

Fig. 2.

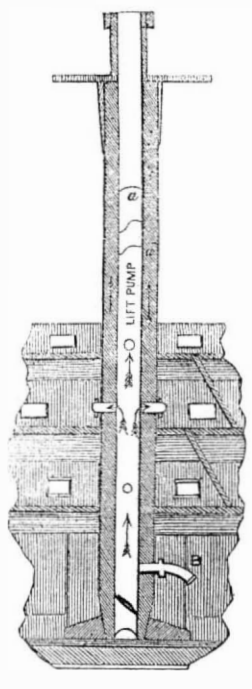



Figure 2 shows a vertical section of a mast and figure 3 a cross section, showing the pump, in the center. The mast can be built of ordinary small timber, or plank, and by being alternately laid with canvas, or prepared animal hide, and united by adhesive materials, gives greater strength and tenacity in a smaller space than wood in its natural state; and completely removes the risk of the mast snapping or becoming decayed: *c* is a hollow square metal frame in the center of the mast and forming the barrel of the pump; *a* are the flanges of the metal frame, and *b* the pieces of wood with can placed between them.

Fig. 3.

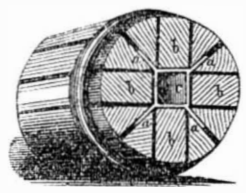
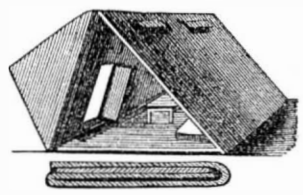


Figure 4 is a perspective view of a military or emigrant's tent, showing one end open; the illustration also shows the form into which it is folded for conveyance. The tents are manufactured of the patented material composed of layers of cork, wood, and canvas. A thick layer of cork is fastened to the flooring forming a bed, which is free from damp and is always warm. The tents also form a raft pontoon, for crossing or sailing up rivers, and applicable for carrying guns in shallow water or they may form a portable breastwork, by being filled with sand or earth, Minie balls or bullets not causing splinters. They are easy of transport, are put up or down in a few seconds; and when folded, they can form the sides, bottom, and top, for wagons, &c., as

Fig. 4.



climate has no effect upon them. The patentee applies the material of which these tents are formed to various purposes, also for fire-buckets, life-buoys, &c., as from its extreme flexibility it is not liable to crack, and possesses great strength with little weight.—[London Engineer.

### The Value of the Telegraph to Railroad Companies.

A writer in the Washington *Intelligencer* argues that every railroad company ought to have a line of magnetic telegraph, as the greatest security against collisions. Their cost is but a trifle to the valuable lives that are lost yearly on railroads, at a cost to them of all their profits and of reputation, and interminable and vexatious law suits.

A number of our leading railroads, now, have telegraphs owned and managed by themselves—all should have them. Every railroad in England has its telegraph; it was first applied there to railroad business.

On New Year's day, 1850, a catastrophe was averted, on one of the London Railroads, by the aid of the telegraph. A collision had occurred to an empty train at Gravesend, and the driver having leaped from his engine, the latter started at full speed to London. Notice was given by telegraph to London and other stations; and, while the line was kept clear an engine and other arrangements were prepared as a buttress to receive the runaway. The superintendent of the railroad also started down the line on an engine, and, on passing the runaway, and had it transferred at the next crossing to the up line, so as to be in the rear of the fugitive. He then started in chase, and on overtaking the other, ran into it at speed, and the driver of his engine took possession of the fugitive—and all danger was at an end. Twelve stations were passed in safety; it passed Woolwich at fifteen miles an hour; it was within a couple of miles of London before it was arrested. Had its approach been unknown, the mere money value of the damage it would have caused might have equalled the cost of the whole line of telegraph.

### The Wrappings of the Mummies.

A newspaper came to us yesterday from Syracuse, New York, made from rags imported directly from Egypt, and which had once wrapped within their folds the mummified remains of the descendants of Mizraim. They were imported by Mr. G. W. Ryan, paper manufacturer at Marcellus Falls, and he thinks them quite as good as the general run of English and French rags. The paper is certainly of very good quality, rather superior to that generally used in this country for newspaper purposes. What it costs the publisher does not say, but as there are thousands of bodies in Egypt, wrapped up in linen folds, it is quite probable that the rags are as cheaply imported as those from any other country.—[Phila. Sun.

### Bones Soluble in Water.

The phosphate of lime or bone earth has generally been rendered soluble for agricultural purposes by means of sulphuric acid. If, however, bone-dust is left for some time in contact with water, the liquid, on filtration, is found to hold phosphate of lime in solution. Water deprived of carbonic acid by long-continued boiling gives the same result. As the organic matter of the bones enters into decomposition, the amount of phosphate dissolved increases. Some of our farmers decompose bones by placing them in heaps, covering them with a thin stratum of soil, and keeping them moist during warm weather.

### American Clocks.

The clock business is at pretty low ebb just now. There are only thirteen clock factories now in operation; two years ago there were thirty-two. The largest factories have failed and are stopped. All this resulted through unwise competition. Only 142,000 clocks will be made this year; two years ago there were 600,000 manufactured in one year.

### Signs of the Weather.

It is a common and a very true saying, "all signs of rain fail in a dry time." During the recent dry period in this region, extending for 16 days without a drop of rain, and the thermometer standing for days above 90°, many signs of rain passed away without a shower. During very dry weather, but little evaporation takes place from the parched earth, hence the atmosphere seldom becomes surcharged with moisture which is the source of rain.

MECHANICS

Inventors, and Manufacturers

ELEVENTH YEAR

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